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1978-1979 Government Activities in the North

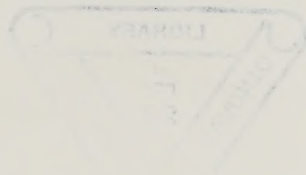


1978-1979

Government Activities in the North

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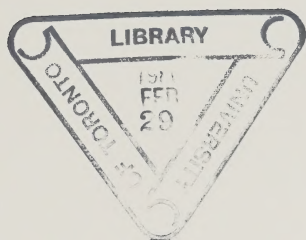
1978-1979 Report and 1979-1980 Plans
Advisory Committee
on Northern Development

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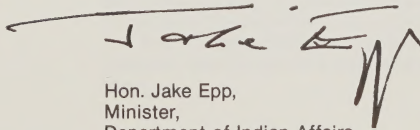
Cette publication peut aussi être obtenue en français.




As the Minister responsible for co-ordinating activities in Canada's two northern territories, I am pleased to present this comprehensive report on government activities in the North.

Those who read this publication for the first time will readily appreciate its value in providing information on federal and territorial activities in Canada's North. Plans approved by the former government for 1979-80 are included but they may be changed to reflect new priorities.

Reports of the activities of 1978-79 that indicate the governments of the Yukon and Northwest Territories and federal departments and agencies are working together, are most encouraging. Continuing effort and new approaches to improve liaison between the Government of Canada and the Governments of the two territories will be necessary to insure effective co-ordination.

A handwritten signature in dark ink, appearing to read "Jake Epp", with a stylized flourish extending from the end of the name.

Hon. Jake Epp,
Minister,
Department of Indian Affairs
and Northern Development.



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Introduction

The 1978-79 edition of *Government Activities in the North* is published in both official languages by the Advisory Committee on Northern Development.

This publication reports annually on government activities in the Yukon and Northwest Territories. In this report, federal departments, agencies, crown corporations and both territorial governments, outline northern responsibilities, review past year's activities and project plans for the fiscal year 1979-80.

Much of the material used under "Plans for 1979-80" had to be assembled in the latter part of the fiscal year 1978-79. By the time this publication is released, many of these will be accomplishments, while others will have been modified or abandoned. As a result, they are treated throughout as being in the future.

Government Activities in the North is a companion report to the publication "Annual Northern Expenditure Plan 1979-80". Together they form a complete source of information on all aspects of government activity in the North.

Both these publications are available from the Publishing Division, Department of Indian Affairs and Northern Development.

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Federal
Departments
and Agencies

Advisory Committee on Northern Development

ACND

Responsibilities

The ACND provides the mechanism for interdepartmental planning and coordination of federal policies and programs pertaining to the Canadian North.

The ACND reports to the Minister of Indian Affairs and Northern Development through its chairman, the deputy minister of the department.

Principal ACND committees and their chairmen are:

Policy

A. Kroeger, Department of Indian Affairs and Northern Development

General

Hughette Labelle, Department of Indian Affairs and Northern Development

Transportation

J.J. Seguin, Transport Canada

Science and Technology

D.B. Dewar, Ministry of State for Science and Technology

Northern Communications

P.D. Brodhead, Department of Communications

Employment of Native Northerners

R.E. Green, Department of Indian Affairs and Northern Development

Federal-Territorial Economic Planning

E.M.R. Cotterill, Department of Indian Affairs and Northern Development

Advisory Committee on Industrial Benefits from Natural Resource Development

G.E. Hughes-Adams, Department of Industry, Trade and Commerce

Federal Interdepartmental Coordinating Committee - Yukon

Ione Christensen, Commissioner

Northwest Territories Co-ordinating Committee

J. Parker, Commissioner

Interdepartmental Advisory Committee on Northern Roads

D. MacKinnon, Department of Indian Affairs and Northern Development

Federal Territorial Regional Planning

Co-chairmen, D. MacKinnon, Department of Indian Affairs and Northern Development, R. Creery, Government of the NWT

Information on the terms of reference for each committee is available through the ACND Secretariat.

In addition, working groups, which report to the principal committees, are formed as required to deal with specific tasks or projects. ■

Land Resource Research Institute, Ottawa

Review 1978-79

Work continued on the compilation of soil-landform maps at a scale of 1:125 000 for Bathurst, Cornwallis and adjacent islands.

Terrain maps for the north-central Keewatin project are being prepared. Completion is scheduled for 1979. Soil information will be superimposed on these soil-landform maps and an expanded legend will accompany them.

Eight sites in the Arctic Red River - Inuvik area were selected for soil-temperature measurements. These sites represent the most common soils in the area: Brunisolic and Orthic Turbic Cryosols associated with earth hummocks on fine-textured till; Mesic Organic Cryosols associated with polygonal peat plateau; Eluviated Dystric Brunisol cryic phase associated with coarse-textured outwash; and Regosolic Static Cryosol associated with medium-textured alluvium.

The objectives of this study are to characterize the soil temperature regime, the thermal regime of the active layer, and the high subarctic soil climatic region. The Inuvik Research Laboratory will read and service the instruments regularly and also measure snow depths.

A guidebook was prepared and a tour group from the 11th Congress of the International Society of Soil Science visited Whitehorse, Dawson, Tuktoyaktuk and Inuvik.

Biosystematics Research Institute, Ottawa

Review 1978-79

A large number of northern insects, arachnids, nematodes, vascular plants, and fungi were identified during 1978. For example, material from Cape Parry was identified for the Canadian Wildlife Service as a part of studies into setting up a new Federal Park. Plant material from the Caribou Range of Great Slave Lake was also identified for the University of Saskatchewan. Three entomologists collected insects for three months in the northwest. Numerous scientific papers were published on the taxonomy of northern insects, arachnids, fungi and vascular plants. A book *Vascular Plants of Continental Northwest Territories* will appear in print during 1979. This was a cooperative project between Agriculture Canada and the National Museums of Canada.

Northern Research Group, Beaverlodge, Alberta

Review 1978-79

No field work was carried out during 1978. A planned visit to the Grand Detour site to observe the persistence of seeded forages was postponed until July, 1979.

A report entitled *Forage Potential of the Slave River Lowlands of the Northwest Territories* was submitted to the Hook Lake Bison Committee as part of a joint report on bison and agriculture in the Slave River Lowlands. This report will be published by the Canadian Wildlife Service in 1979. ■

Responsibilities

Agriculture Canada provides technical assistance in the North on agricultural production, soils and vegetation, research and consultative services for insect and plant fauna.

Review 1978-79

Soil landform maps for the North Central Keewatin project were in preparation. Completion is scheduled for late 1979. Studies continued on soil-temperature regimes for the common soil types in the Arctic Red River - Inuvik area.

Insect and plant surveys were carried out over a large area of the Northwest in an effort to identify and classify fauna. Work continued on assessing the forage potential of the Slave River Lowlands.

Canada Employment and Immigration Commission

CEIC

Responsibilities

The commission helps meet employment needs of employers and employees. It uses wide-ranging programs and services, including Canada Employment Centres (CECs), professional counselling, recruitment services, training, relocation assistance, non-immigrant workers' control, industrial adjustment assistance, and the unemployment insurance program.

Operational responsibilities for the commission in the Yukon Territory come under the Director, Yukon Territory. Operational responsibilities for the Commission's services in the Northwest Territories come under the Territorial Director of Employment and Insurance.

Federal-Territorial relations provide consultation in policy development on employment and immigration matters. The Manpower Needs Committees in the Yukon and Northwest Territories, with representation from several departments of the territorial and federal governments, meet a number of times each year.

Yukon Territory

Review 1978-79

The commission focused on the maintenance and improvement of services to all areas of the Yukon. In addition to the activities undertaken by Whitehorse-based staff, Outreach workers continued to provide employment services to their local labour forces.

Through personal visits to employers, liaison with employer organizations and communities and publicity programs, employers were encouraged to use the services of the commission, to upgrade their work force through training, and to develop methods to ensure maximum use of the Yukon labour force.

Canada Manpower Consultative Service activities completed several Manpower Assessment Incentive Agreements and negotiated two new ones. Agreements included the completion of activities relating to the closure of the Cassiar Asbestos Corporation's Clinton Creek mine and the cessation of activities of three agreements with the White Pass and Yukon Corporation. New agreements include a major initiative with representatives of industry, unions, and the Yukon Territorial Government to determine a way the Yukon labour force can participate more fully in existing and potential growth. An agreement to help establish the displaced workers of Pacific and Arctic Motors Ltd. was undertaken.

The Canada Summer Youth Employment Program operated from February to September, 1978. The graduate student who managed this operation contacted all post-secondary Yukon students regarding summer employment and identified student employment opportunities. In addition, two undergraduates provided assistance to Yukon secondary school students seeking summer employment. This included visits to potential Yukon employers, to secondary schools, short courses on job search techniques and a public relations program directed at employers. During the 1978 program, 1 149 students registered for employment and 574 were placed.

In February, 1979, the Canada Summer Youth Employment Program re-opened.

Other full-time youth activities included specialized employment services such as counselling, marketing, placement, job search techniques, assistance to secondary school counsellors and the use of specific programs to overcome the difficulties young people experience securing and keeping employment. A total of 48 youths obtained work experience under the Job Experience Training program.

A native employment specialist was recruited to assist in application of all CEIC programs to the native segment of the labour force.

Canada Manpower Training Program activities continued throughout the year in virtually all courses offered by the Yukon Territorial Government through the Yukon Vocational and Technical Centre, both in Whitehorse and in outlying Yukon communities. During 1978-79, a total of 43 000 training days were purchased under the Adult Occupational Training Act Agreement. This included basic training for skill development; skill full-time; and skill part-time. In addition, a small number of trainees was referred to southern training institutions, primarily in British Columbia.

Canada Manpower Industrial Training Program provided financial incentives to employers who hired and trained unemployed and special needs workers and who upgraded the skills of those already employed. During the year, 359 Yukon workers were trained. This included 193 employed, 131 unemployed, 25 with special needs, and 10 helicopter pilots. A total of 210 individual contracts with employers was involved in this training program.

Under the terms of the Adult Occupational Training Act Agreement, the commission and the Yukon Territorial Government consulted, coordinated and planned adult training activities.

Employment Tax Credit program activities began to increase near the end of the year with five contracts negotiated and approved by March 31, 1979.

The Canada Manpower Mobility Program helps workers explore and relocate to jobs away from their places of residence, accept temporary jobs in other areas, travel to Canada Employment Centres for services not available in their home areas and travel to training courses. During the year, 248 temporary employment grants, 23 exploratory grants and six relocation grants were authorized in the North. Employment operations included 7 688 registrations for employment, 12 078 counselling interviews; 8 943 referrals to employment opportunities and 2 610 placements. In addition, 1 292 visits were made to employers. Insurance operations processed 4 471 claims for unemployment insurance benefits.

The Employment Development Branch, completed Cycle II of Canada Works projects carried over from 1977-78 and implemented Cycle III, which commenced in the fall of 1978. Cycle III funds totalling \$777 194 were allocated to 18 projects, creating 79 jobs for 1 635 work weeks of employment.

The Young Canada Works program funded 17 projects in 1978 creating summer work for 113 students. Young Canada Works funding for the summer of 1979 is \$189 000. Approved projects will operate for at least six consecutive weeks with a maximum of 18 weeks between April 30 and September 8.

The Local Employment Assistance Program (LEAP) funds projects to develop long-term jobs and employment opportunities. The first project has already been funded and several more are in the development stages.

Immigration operations included enforcement and control activities throughout the Yukon. Immigration services are available in Whitehorse on a year-round basis and in Beaver Creek during the summer months.

The contracts with two Yukon Outreach projects were terminated effective March 31, 1979. These projects will be replaced with smaller community-based Outreach projects.

Considerable time and effort continued to be directed toward manpower planning for the Alaska Highway Pipeline and Shaktwak project. Other planning activities included discussions and negotiations on the implementation of new socio-economic programs in the Yukon.

Plans for 1979-80

The commission will emphasize the improvement of services to all areas of the Yukon by: continuing to coordinate and integrate one-stop service; expanding services through existing programs; developing and supporting services through small community-based Outreach projects; ensuring employers are aware of the services available to retain and upgrade work forces; developing and broadening the scope of youth programs to ensure that Yukon young people receive information and assistance in career planning; expanding immigration services to meet increased workloads; expanding and coordinating CEIC services to natives; coordinating implementation of new economic initiatives; planning for employment and training demands from projects in the Yukon to ensure workers benefit from employment opportunities.

Northwest Territories

Review 1978-79

The Northwest Territories were served by Canada Employment Centres in Yellowknife, Hay River, Inuvik and Frobisher Bay. Full-time sub-offices were maintained at Fort Simpson and Fort Smith and itinerant services were provided to all other major communities. A sub-office in Rankin Inlet opened in December.

The full range of unemployment insurance programs was available in Frobisher Bay and Yellowknife. During 1978, 3 298 claims were processed for NWT residents.

The Canada Employment Centre (CEC) at Yellowknife with a staff of 28 and its branch offices, serves about 30 settlements and a total population of over 20 000. This CEC is responsible for about two-thirds of the NWT. Services are largely directed toward the government offices in the capital of the NWT and the major mines, including two large gold mines in Yellowknife.

The centre at Hay River is responsible for all labour market activities covering an area of 48 000 km² with a population of approximately 6 500. During the past year, the CEC has concentrated on employer needs in four major communities with emphasis on the transportation and mining industries.

The Canada Employment Centre at Inuvik is responsible for an area of approximately one-sixth of the Territories and serves about 12 settlements with a combined population of about 6 000. It is primarily concerned with the Dempster Highway activities and activity generated by petroleum exploration.

The Canada Employment Centre at Frobisher Bay is responsible for about one-sixth of the area of the NWT also. It serves approximately 24 settlements with a combined population of over 8 000. The staff of four is concerned with employment in the Baffin Region and the development of a new lead-zinc mine at Strathcona Sound.

More than 10 500 workers registered with Canada Employment Centres in the Northwest Territories during 1978-79. Of these, more than 8 000 were referred to 6 000 known vacancies. More than 3 000 of those referred were placed in jobs.

CEC counsellors conducted interviews with 21 600 workers and made more than 1 280 visits to employers.

There were 85 projects approved in the NWT during 1977-78. Together they cost \$3 684 000 and included recreation, community hall constructions, and child care programs. Just over 1 000 jobs were created. Sixty-six projects were carried over into 1978-79. Young Canada Works 78 approved 24 projects that provided 173 jobs at a cost of \$261 000. The projects were for research, life skills, and community cleanup. Canada Works 78-79 approved 77 projects covering cultural inclusion, recreation, community improvement, and child care programs. The cost was \$2 878 000 and 642 jobs were provided. There were 72 projects carried over into 1979-80. Local Employment Assistance Program approved six projects for 100 jobs. The cost was \$613 000.

The Canada Manpower Training Program is administered under an agreement between the commission and the Government of the Northwest Territories. The latest agreement, signed May 2, 1978, expires March 31, 1981. It emphasized that manpower training programs can be effective when consultation and cooperation exist between Canada and the NWT. The development of comprehensive training programs with industry is encouraged.

During the fiscal year, the commission purchased 56 100 training days from the Department of Education, Government of the Northwest Territories, to provide skill development for 237 trainees; apprenticeship for 281; and academic upgrading, for 370 trainees.

In addition to institutional training purchased from the NWT, 242 contracts were signed under the Canada Manpower Industrial Training Program. They covered training for 541 people.

During the fiscal year, 23 grants were authorized under the Canada Manpower Mobility Program for workers to search for employment outside their areas of residence. There were 20 relocated to employment and 29 special travel grants authorized. Total expenditures for this activity were \$35 010. A further 26 exploratory grants and 29 relocation grants were authorized for people looking for or accepting work in the Northwest Territories.

During 1978-79, Outreach programs operated in Baker Lake, Eskimo Point, Fort Good Hope, Fort Liard, Fort Resolution, Igloodik, Pond Inlet, Pangnirtung, Tuktoyaktuk, Rae Edzo and Yellowknife. A total of 12 Outreach workers were in the NWT. Currently, there are 11 Outreach projects and 11 Outreach workers.

Plans for 1979-80

The commission plans to better utilize programs and services in the NWT. This will be done by streamlining administrative systems and continuing to increase community involvement.

Major thrusts are planned to: formalize a regional committee to gather labour market information; extend the penetration of commission programs and services to the more remote communities; focus programs on the youth sector of the NWT labour force; continue special emphasis on native employment in the NWT. ■

Canadian Broadcasting Corporation

CBC



A couple of elders and film crew who took the first film *We Remember*

Northern Service

Responsibilities

Northern Service provides broadcasting service to meet the special needs of all the people living in the North and give them a sense of identity with the rest of Canada and an awareness of the needs they share with all Canadians. It also helps preserve the cultural identity of the Inuit and Indian people by providing communication in local languages and dialects and by reflecting in its programs their values and traditions.

Since the CBC Northern Service began in 1958 it has progressed from providing taped radio programs to northern stations and a shortwave network service to a mix of locally and regionally-produced programs plus network programs delivered through ground networks and by satellite.

Over the past 20 years, public awareness of the North has shown a marked increase. This interest was prompted by native land claims and the controversy over development of the North's non-renewable resources. The CBC Northern Service must keep in touch with and illustrate changing opinions, attitudes, plans and activities concerning the North.

Review 1978-79

In the rapidly-changing North there is a need for shared information. The first objective in 1978-79 was, as in the past, improvement in the basic radio news and current affairs programs for the Yukon, delta and western arctic, Mackenzie and eastern arctic sub-regions.

This improvement has been achieved by providing training courses for hosts and reporters, by holding public meetings in northern communities to obtain a measure of the usefulness of programs, by strengthening the research capability for these programs and by instituting regular program evaluation. Continued improvement will require more work on specialized training for native-language programmers and the regular program evaluation.

Another important radio objective has been the need to produce radio programming for the people in the Keewatin sub-region of the Northwest Territories.

Northern Service plans received Canadian Radio-Television Commission approval in March, 1978, to switch Churchill, Manitoba, to the Northern Manitoba network. This permitted Northern Service to withdraw its staff and studio resources from Churchill and move them north.

Earlier, at a public meeting with representatives of all Keewatin communities, a recommendation that a Keewatin Radio Production Centre be located at Rankin Inlet resulted in a construction start. A project development officer has been in Rankin since August, 1978. He spent the last eight months performing and coordinating audience surveys, defining programming needs and locating local staff. It is expected that this centre will be producing one to two hours of Keewatin programming daily by fall, 1979.

In cooperation with the French Services section of the CBC, Northern Service offices have held meetings with officials of Taqramiut Nipingat Incorporated, representing Inuit communities of northern Quebec, to develop programming for northern Quebec. At present, Northern Service programs are delivered by shortwave and community radio stations.

The Northern Service has agreed to provide program staff training in Inuktitut for programmers from these stations and to purchase programs from Taqramiut Nipingat Incorporated for broadcast on shortwave. Arrangements were made to send a library of recorded Inuit music to each community station.

Four northern settlements gained access to their local CBC radio transmitter to broadcast community programs this year. The communities are Churchill, Spence Bay, Pond Inlet and Rae-Edzo. In February, a training workshop for Inuktitut-speaking community broadcasters was held in Rankin Inlet. Similar workshops are planned for 1979-80.

Radio work in the delta and western arctic has been enhanced this year with the February completion of new production facilities and offices in Inuvik. A partial refurbishment of the studios and offices in Whitehorse was also carried out.

Northern Service and CBC Prairie Region established small radio production centres for northern Manitoba and Saskatchewan, in Thompson and La Ronge. By the end of 1978 facilities were near completion in both centres and staff was moving into these communities.

In television, funds were approved to set up a modest production centre in Yellowknife. It has been designed and built (in space within the existing radio plant), staff has been recruited and relationships built up with northern film-makers and other potential contributors. This centre will train northern film-makers, produce programming about and for northern viewers and package and present CBC programs and programs obtained from independent sources. The centre will guide and support existing production groups such as "Nunat-siakmiut" in Frobisher Bay, PIC-TV in Pond Inlet and the Council for Yukon Indians.

The beginning of regular, but limited, programming from the centre will be in June, 1979.

Apart from the work of the regional packaging, training and production centre in Yellowknife, the maintenance of the northern television schedule was the responsibility of the southern television group in Ottawa. This responsibility entails coordination of southern production, including the weekly Inuktitut information program, TARQAVUT; procurement of programs and films from non-CBC sources; production of station breaks, public service announcements and program information; scheduling; liaison with CBC areas; and planning and general administration.

Visits were made to 54 Yukon, Northwest Territories and Northern Quebec communities by Northern Service sub-regional staff to discuss CBC television and radio programming.

Churchill was transferred to Northern Manitoba programming June, 1978.

Community radio operations were started at Churchill, Pond Inlet, Rae-Edzo and Spence Bay.

Keewatin radio project officer went on site August, 1978.

Major new Inuktitut current affairs radio program TAUSONII (Inuit World) was launched October, 1978, at Frobisher Bay.

Community television was initiated at Pond Inlet, NWT, in October, 1978.

Consultation was held in Yellowknife with representatives of the northern native organizations about native language programming on television November, 1978.

Inuvik radio production facilities were completed in new premises February, 1979.

The first Inuktitut language community radio broadcasters training workshop was held February, 1979, in Rankin Inlet.

The first northern-produced film for television WE REMEMBER was telecast on CBC north March 12 and 19, 1979. Footage was filmed on location in the Mackenzie District of the Northwest Territories by Yellowknife Centre television unit staff with Raymond Yakeleya as Director and Bob Charlie as Cameraman.

Equipping of the television production centre for Yellowknife was in the final stage of completion at March, 1979.

Plans for 1979-80

It will be a year of experiments as the Yellowknife Centre comes to life. During the first year, a wide range of program components will be tried and telecast in an attempt to respond to the northern programming needs, standards and style. Audience feedback will be organized and is crucial to future production.

Experimentation will be the key in the Keewatin also as the new radio production centre begins to provide a radio service produced in the Keewatin, employing Keewatin residents. The programming will be largely in Inuktitut.

The improvement of the quality of information programming for each northern sub-region will be a major radio objective. Program training and program evaluation will be emphasized.

Community visits by sub-regional staff to obtain audience reaction to programs will continue.

A further 1979 objective involves establishment of a small radio production centre in Ottawa to provide reports and interviews for the northern stations about northern-related events occurring in the capital and other southern centres. Ottawa is the most important southern city for northern news because of the agencies there that have northern responsibilities. This centre will be developed through existing resources from the present Northern Service Production Centre in Montreal. ■



CBC Mackenzie staff meet with members of the Fort Rae Band

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Responsibilities

CN provides the North with transportation and telecommunication services. This has included transportation to the mine and forest industries, for exploration and construction projects, and telecommunications for residential and commercial use. Consultation services have also been provided for the logistical planning of pipelines, arctic rail and other studies.

Review 1978-79

Transportation services to the North in 1978 were essentially unchanged from previous years. CN service to Pine Point and Hay River, NWT, was maintained through its subsidiary, the Great Slave Lake Railway (GSL Ry). From the mines at Pine Point, the GSL Ry was the originating road for the movement of lead and zinc concentrates south to Kimberly, B.C. With CN Rail, the GSL Ry also transported supplies to Hay River, for transfer to barges on the Mackenzie River system. As a result of reduced development, particularly in exploration for oil and gas in the Mackenzie Delta, this traffic level is much lower than during the early 1970's.

CN Telecommunications (CNT) continued to improve and extend its telegram, telex, data communications and mobile telephone services to the Yukon Territory, the western Northwest Territories and northern B.C., an area of approximately 2.35 million kilometers square.

A major development in 1978 was establishment of CNT's northwest telephone operations as a separate profit centre within the CN corporation. (See Northwest Telecommunications Inc.). Headquarters were opened at Whitehorse, the largest community in the CNT franchise area. The first stage took place in October when the general manager and one-half of the headquarters staff moved to Whitehorse. The remaining staff will be transferred in 1979 and 1980.

The new company, activated in the spring of 1979, is called "Northwest Telecommunications Inc. - Télécommunications du Nord-Ouest, Inc."

The total number of telephone exchanges remained at 62 during 1978, but one was removed from the Yukon Territory and another added to the Northwest Territories.

At the end of 1978, the number of main stations and telephones had increased from 1977 by 8.2 per cent and 9.2 per cent respectively in the Northwest Territories and by 7.1 per cent and 6.7 per cent respectively in the Yukon.

Plans for 1979-80

Logistical planning for the transportation of materials for the Alaska Highway gas pipeline will be undertaken. CN Rail will also provide logistical planning assistance as required to the Foothills Pipe Lines (Yukon) Limited. ■

Air Transport Committee

Responsibilities

The CTC licenses air carriers for commercial air services; provides the economic regulation of air carriers; investigates and surveys operations and developments of commercial air services in Canada and advises the Minister of Transport on matters relating to civil aviation.

Review 1978-79

DEW Line contracts were awarded to Transair Limited for the vertical airlift (north-south) for the period October 1, 1978, to September 30, 1979; and to Nordair Limited for the lateral airlift (east-west) for the period January 1, 1979, to September 30, 1979.

Supervision and coordination of these contracts continues.

Authorities granted

Wardair Canada (1975) Ltd.

Amend a condition under a Class 4, a Class 7 and a Class 9-4 to add authority to operate an unrestricted number of DASH-7 aircraft, under the presently existing Group E licences.

Pacific Western Airlines Ltd.

Proposed acquisition of an interest in Transair Limited by purchase of 2 245 797 common shares without par value in the capital stock of Transair Limited was allowed; cancel a Class 4 and Class 7 for violation of a condition of the licences; authority to serve Resolute Bay, NWT, on a Class 2 basis. Resolute Bay was previously served on a Class 3 basis as an extension of a Class 2 to Edmonton, Fort McMurray, Fort Chipewyan, Peace River and High Level, Alta.; Uranium City, Saskatchewan; Fort Smith, Yellowknife, Cambridge Bay and Fort Simpson, NWT.

Transair Limited

Amend a Class 1 licence to include Regina and Saskatoon in Saskatchewan, and Calgary and Edmonton in Alberta, but prohibiting non-stop services between Winnipeg and Calgary and Winnipeg and Edmonton and from operating between Regina and Saskatoon and between Calgary and Edmonton; delete a condition of Class 2 licence which restricted service to Whitehorse, YT, to a two-year period from May 21, 1976; amend a condition of a Class 3 restricting service to Groups E and F aircraft.

Klaas Hendrick Heynen (Kusawa Outfitters)

Approve an application for a Class 4, Group A service restricted to carrying registered guests and employees of Kusawa Outfitters, from a base at Whitehorse, YT, to and from specific camps.

Buffalo Airways Ltd.

Amend a condition under Class 4 and Class 7 licences to operate with fixed wing aircraft in Group D (restricted to Douglas DC-3 type aircraft).

Nahanni Air Services Ltd.

Authority to operate a Class 9-4 using Groups A and B aircraft from a base at Norman Wells, NWT.

Raecon Air Limited

Authority to operate a Class 4 restricted to registered guests and employees on a seasonal basis from May 1 until October 31, using fixed wing aircraft in Groups A and C from a base at Yellowknife, NWT, to specific lakes.

Northwest Territorial Airways Ltd.

Authority to operate with certain restrictions, a Class 2 to serve Yellowknife, Cambridge Bay and Coppermine, NWT, using fixed wing aircraft in Groups D, E and F; amend a Class 9-4 by adding authority to operate one Hercules aircraft in Group G; amend a Class 3, a Class 9-04 and a Class 7 restricted to the use of four aircraft in Group D, two in Group E and four in Group F and limit them to the use of propeller-driven aircraft only: four in Group D, two in Group E, four in Group F and one Lockheed Hercules turbo-prop aircraft in Group G. The operation of Group E is suspended until August 19, 1979.

Kenn Borek Air Ltd.

Authority to operate Group D aircraft under a Class 4 and a Class 9-4 subject to certain restrictions; lift suspension of a Class 4 restricted to the use of one DC-3 aircraft in Group D, operated from a base at Frobisher Bay, NWT; amend a Class 4 and a Class 9-4, Group C restricting them to fixed wing aircraft in Groups C and D; suspend until July 31, 1979, a Class 4 at Frobisher Bay, NWT; suspend until July 31, 1979, authority to operate Groups A and B aircraft under a Class 3, a Class 4, a Class 7 and a Class 9-4.

Ostashek Outfitting Ltd.

Authority to operate a Class 4, Group A restricted to carrying registered guests and employees from a base at Kluane River, YT, to points located in Registered Guiding Area No. 74-1.

Stan Reynolds Outfitting

Authority to operate a Class 4, Group A, restricted to registered guests and employees, from a base at North Fork, YT, and from pick-up points at Dawson City Airport and Mile 75 Dempster Highway to points in Registered Guiding Area No. 73-03-1.

Trans North Turbo Air Limited

Authority to operate for a period of two years a Class 3, Groups A, B and C, to the points Watson Lake, Pine Lake, Teslin, Whitehorse, Haines Junction, Burwash Landing and Beaver Creek, YT, but prohibiting non-stop services between Whitehorse and Watson Lake; renew a Class 3 and delete a two-year condition ending February 18, 1979.

Latham Island Airways

Transfer a Class 4 from James L. McAvoy, carrying on business under the firm name of Latham Island Airways, to Latham Island Airways Ltd.; amend a Class 4, Groups A and B (limited to 5 000 pounds in Group B) to read Groups A and B (restricted to 5 250 pounds in Group B).

Yukon Airways Limited

Transfer a Class 4 and a Class 9-4 from Yukon Airways Limited to Alkan Air Ltd.

Survair Ltd.

Transfer two Class 3, one Class 2, two Class 4 and one Class 9-4 services operated from a base in Frobisher Bay, NWT, from Survair Ltd. to Bradley Air Services Limited carrying on business under the firm name and style of First Air; cancel a Class 4, a Class 7, a Class 9-4 and another Class 4 from a base at Ottawa; amend a Class 3 licence to change the point Arctic Bay — Strathcona Sound to Arctic Bay — Nanisivik.

Watson Lake Flying Services Ltd.

Suspend until further order a Class 4 as a result of violation of a condition of the licence; lift suspension imposed on a Class 4 licence.

Mackenzie Air Ltd.

Lift suspension of a Class 4 operated from a base at Hay River, NWT.

James Lloyd Simcox and Murray Bayley (Northern Adventure Air Service)

Authority to operate a Class 7, Group A from a base at Whitehorse, YT.

Page Flight Services Ltd.

Authority to operate a Class 4, Group A from a base at Fort Good Hope, NWT.

Norcross Airlines Ltd.

Authority to operate a Class 4, Groups A and B from a base at Ross River, YT.

Air North Charter and Training Ltd.

Amend a Class 9-4, Group A, to Groups A and B (restricted to Britten-Norman Islander aircraft in Group B).

Ptarmigan Airways Ltd.

Amend a Class 3 lifting the two-year restriction period from August 23, 1976, for service to Fort Resolution, Pine Point and Hay River, NWT.

Duluth Air Taxi Service Inc.

Rescind a decision authorizing a Class 9-4.

Harrison Airways Ltd.

Cancel a Class 3 serving Dease Lake and Atlin, B.C. and Whitehorse, YT.

International Jet Air Ltd.

Cancel a Class 9-4 in respect of authority to operate Group F aircraft; cancel a Class 4 restricted to the use of one Lockheed L-188 aircraft in Group F operated from a base at Inuvik, NWT.

Nordair Ltd.

Cancel a Class 3 serving Frobisher Bay, Broughton Island, Pangnirtung, Cape Dyer, Cape Dorset, Coral Harbour, Clyde River (Cape Christian), Igloolik, Hall Beach, Pelly Bay, Arctic Bay/Nanisivik and Pond Inlet, NWT.

Gateway Aviation Ltd.

Suspend for six months the Group D authority (restricted to DC-3 aircraft) under a Class 4 and a Class 9-4; suspend for one year the Group D authority of a Class 4; transfer the Group C authority of a Class 4 and a Class 9-4 from Gateway Aviation Ltd. to Inuvik Coastal Airways Ltd. with a restriction to the use of fixed wing aircraft in Group C and other conditions.

Steinwand's Transport Ltd. (Air Dogrib)

Amend a Class 4 restricted to the use of Groups A and B (limited to one aircraft in Group B) by restricting the service to the use of Groups A and B aircraft.

Peter Robin Ogilvie (Slave Air Services)

Suspend a Class 4 for violation of a condition of the licence.

Simpson Air Ltd.

Add to a Class 4, authority to operate a Class 7 using Group B aircraft; suspend for a period of one year a Class 4 and a Class 9-4 in respect of the Group D authority.

Mackenzie Delta Flight School Ltd.

Cancel a Class 7 operated from a base at Inuvik, NWT.

Nahanni Helicopters Limited

Change the base of operation of Classes 4 and 7 from Fort Simpson, NWT, to Delta, B.C.

Frontier Helicopters Limited

Transfer shares of Frontier Helicopters Limited to Conair Aviation Ltd.; add to a Class 7, authority to operate a Class 7 Specialty using Groups A-RW, B-RW and C-RW aircraft; transfer shares of Frontier Helicopters Limited from Omineca Helicopters Ltd. to Conair Aviation Ltd.

North West Survey Corporation (Yukon) Limited

Amend a Class 7 by changing the base of operation from Whitehorse, YT, to Edmonton, Alberta.

Lambair Limited

Cancel a Class 3 serving Churchill, Kaskattama, Manitoba; Winisk, Ontario; Belcher Islands, NWT; and Great Whale, Quebec; suspend for a period ending June 30, 1979, a Class 4, Groups B and C operated from a base at Rankin Inlet, NWT.

Northward Airlines Limited

Cancel a Class 3 in respect of the Group D authority; amend a Class 2 licence by deleting a condition prohibiting non-stop services between Norman Wells and Inuvik, NWT; lift a suspension imposed for a period of one year on a Class 2 and a Class 3 in respect of the Group B authority; amend the Class 2 licence restricting it to use of Groups B and C aircraft and limiting the Class 3 licence to the use of groups B, C, D and E aircraft.

Aklavik Flying Service Limited

Suspend a Class 4 and a Class 9-4 for violation of a condition of the licences.

Bradley Air Services Limited

Amend a Class 4, Group E restricted to the use of one HS 748 aircraft by authorizing one propeller driven type aircraft in Group E; cancel a Class 4 operated from a base at Frobisher Bay, NWT. ■

Central Mortgage and Housing Corporation

CMHC

Responsibilities

Central Mortgage and Housing Corporation (CMHC) is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the territorial housing corporations and private non-profit organizations. Financial and technical assistance is also provided to native groups in both territories.

During 1978 responsibility for the corporation's activities in the territories was assigned to a senior officer, reporting directly to the president. The day-to-day activities are administered by branch offices in Yellowknife and Whitehorse, the latter having just been upgraded and officially opened January 2, 1979.

Review 1978-79

Yukon

During 1978, 182 housing units were financed under the National Housing Act. Of these, 171 were approved lender loans insured by CMHC and the remaining 11 were direct.

CMHC provided \$175 000 in grants toward sewage treatment projects in Whitehorse and Dawson City.

The Yukon Association of Non-Status Indians (YANSI) assisted CMHC with a program of emergency repairs to native housing. During 1978, 33 houses were improved and grants totalled \$75 500. A sustaining grant of \$74 125 was made to YANSI for its continued support in the housing programs.

Northwest Territories

During 1978, 347 housing units were financed under the National Housing Act. The majority, 238, were financed directly by CMHC in cooperation with the Northwest Territories Housing Corporation (NWTHC). The remaining 109 were approved lender loans insured by CMHC.

Twelve loans totalling \$7 900 000 to help the NWTHC acquire and develop land for residential use throughout the territory were approved.

The Mackenzie Valley Housing Association (MVHA), a native group, helped CMHC carry out emergency repairs to native housing in the western part of the territory. During 1978, 50 houses were improved by grants totalling \$137 000. A sustaining grant of \$175 000 was made to MVHA for its continued support in Mackenzie region housing programs.

A sustaining grant of \$91 480 was also made to the Inuit Non-Profit Housing Corporation to help it represent the interests of the Inuit population.

Yellowknife received \$50 000 under the Municipal Incentive Grant Program to help finance a medium density housing development.

Total Activity Approved — 1978

	No. of Units	Amount \$000
Yukon	182	8 318
NWT	347	17 100
NWT (Land)		7 900



Responsibilities

The Department of Communications fosters the development and operation of telecommunications for Canada, from domestic and international standpoints. It recommends national communications policies and programs, promotes the development and efficiency of Canadian communication facilities, assists Canadian communications systems to adjust to changing conditions, allocates radio frequencies, protects Canadian interests in international telecommunications matters, and coordinates telecommunications services for Canadian Government departments and agencies.

Review 1978-79

The department continued involvement with various arms of the Advisory Committee on Northern Development (ACND) and played a leading role coordinating northern communications planning.

A major portion of the department's ACND involvement was through its committees in the two territorial capitals. The DOC district manager for the Yukon is a member of the Federal Interdepartmental Coordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-Committee of the FICC. The DOC regional director, Central Region, is a member of the NWT Coordinating Committee in Yellowknife and chairs that committee's Standing Group on Communications.

The Department of Communications continues to give priority to the need for more northern-produced and native language programming on the Canadian Broadcasting Corporation's Northern Television Service.

During April, 1978, the Canadian Radio-television and Telecommunications Commission completed a series of special hearings dealing specifically with CBC's Northern Broadcasting Services. These hearings were held in the Northwest Territories communities of Inuvik, Yellowknife, Cambridge Bay, Rankin Inlet, Pond Inlet and Frobisher Bay, as well as at Fort Chimo, Quebec, and Goose Bay, Labrador. Eighty-seven representations from individuals and groups were heard by the commission. The commission expressed confidence that the submissions would be a direct and important source of reference material concerning northerners and CBC radio and television services in the North. Transcripts of the proceedings were entered as part of the CBC network licence renewal hearing held in Ottawa October, 1978.

The Minister of Communications announced in June, 1978, an important initiative aimed at developing an Inuit broadcasting capability for the North: the Inuit Tapirisat of Canada's Anik-B pilot project, "Inukshuk", formulated jointly by the federal Departments of Communications and Indian Affairs and Northern Development and Inuit Tapirisat of Canada.

Anik-B, Canada's ninth satellite, was launched by the United States' National Aeronautics and Space Administration (NASA) from the space centre in Florida, December 14, 1978. It is a dual-band satellite, with 12 channels in the conventional four and six Gigahertz (GHz) microwave bands, for service in Telesat Canada's existing commercial satellite communications system, and six in the new 14 and 12 Gigahertz frequency bands. DOC is leasing this high-frequency capacity of Anik-B for two years to do carefully-selected pilot projects, including Inuit Tapirisat of Canada (ITC)'s project in community communications.



A 116-foot NASA Delta rocket launched Anik-B, Canada's ninth satellite. The United States' National Aeronautics and Space Administration (NASA) launched it from the Florida Space Centre December 14, 1978.

The ITC project, "Inukshuk", will involve interactive communications and teleconferences links to meet the special needs of Inuit communities. Satellite earth terminals will be located at one principal and five community locations. The Department of Indian Affairs and Northern Development is providing \$1.9 million to the project over the 1978-1981 period. This money will cover the cost of training, salaries, leasing and capital expenditures, travel and general administration.

Two-year leasing of the 14/12 GHz channels, on the Anik-B satellite, with an option for three more years, costs \$32 million, including launch. Earth station conversion, administration and other costs will be a further \$4 million. DOC aids leaders of Inukshuk and other projects to plan and conduct their activities.

The satellite-supported television links will permit general Inuit-language broadcasting, educational instruction services and, with special equipment, teleconferences for getting together participants in a number of different communities. The experiment will enable Inuit to remain in their communities while making vital contributions to inter-community and territorial matters. The long-term benefit is that there will be a pool of Inuit, trained and experienced in all the technical and production aspects of television and capable of producing northern content for the CBC's Northern Television Service.

In addition to DOC's involvement with Inuit Tapirisat of Canada, the department continued to work closely with the Secretary of State on the Native Communications Program. In the Yukon, DOC provides the chairman for the Coordinating Committee of the Native Communications Program for the Ye Sa To Communications Society. The Department of Communications plays a similar role in the NWT, through membership in the Coordinating Committee for the Native Communications Society of the western NWT. During 1978-79, DOC officials in Ottawa were in contact with DOSS officials regarding extension of the current NCP by one year to March 31, 1980, and development of a possible replacement program.

During 1978-79, the DOC's Central Regional Office elected to participate again in Employment and Immigration Canada's Summer Job Corps Program. Modifications were required to make the program suitable to the northern environment and Employment and Immigration agreed. DOC's Central Regional Office was able to expand the size of the program in 1978, from six to 18 projects, 13 of which were in the Northwest Territories at Inuvik, Fort Good Hope, Cambridge Bay, Fort Smith, Coppermine, Baker Lake, Rankin Inlet, Eskimo Point, Igloodik, Cape Dorset, Pond Inlet, Pangnirtung and Sanikiluaq. The projects included work on newspapers and other publications, restoration of old photographs, Inuktitut - English translation and work in community radio and television. At Pond Inlet, for example, the project was a combined radio, newspaper and television production operation. Two workers travelled with summer hunting parties, shooting super 8 footage to ultimately form part of the PIC-TV library. A second part of the project was the announcer-operator duties and the gathering of news and community interest items for the community radio station and local newspaper. In all, four jobs were created at Pond Inlet.



Eric Manick, Summer Job Corps Program Project Leader at Baker Lake, takes a turn at the controls at the local community broadcast station.

Igloodik was the location of another interesting project. In this one, students prepared program material for local presentation and worked at the community radio station. Attempts were made to translate children's fables into Inuktitut. The project workers were all bilingual (Inuktitut - English) and thus able to participate fully.

Among the organizations that cooperated and contributed to the success of the Summer Job Corps projects were the Committee for the Original Peoples Entitlement, Inuit Okungit Inungnun Communications Society, CBQE Radio Society of Fort Good Hope, Kitikmeot Inuit Association, Slave River Journal, Hamlet of Coppermine, Quamanittuap Naalautaa (Baker Lake Radio Society CKQN-FM), Rankin Inlet, Inuit Cultural Institute, Igloodik Community Radio Society, Cape Dorset Community Radio Society, Pond Inlet Radio Society, PIC-TV, Hamlet of Pond Inlet, Pangnirtung Radio Society, Hamlet of Pangnirtung and the Sanikiluaq Radio Society.

The projects met DOC's objectives of broadening the base of community resource people knowledgeable in the field of communications. Sponsoring agencies are beginning to view the long-range potential of this type of program, not only from reduced unemployment at the community level, but in identifying new personnel.

DOC's Central Regional Office coordinated work on a Northern Community Local Agent Development proposal under the Economic Growth Component of Canada Works. Residents of northern communities must sometimes wait considerably longer than those in the south for services. Provision of service is hampered by the lack of trained people and by the economics of training and converting. However, if a resident work force is developed, improved local service could become economically viable. With this aim in mind, a Northern Community Local Agent Development proposal was developed



Leonie Ford, Summer Job Corps Program Replacement Leader at Rankin Inlet, adjusts sound levels during a stint on the Rankin Inlet community access radio project.

in consultation with Employment and Immigration and Canadian National Telecommunications. The proposal became operative during 1978-79 and was expected to create a total of 475 hours of work per month, involving 15 communities, 14 in the NWT and one in the Yukon.

Management of the Radio Frequency Spectrum

The Department of Communications assigns radio frequencies and issues radio licences under the Radio Act. In the North, this service is provided at three District Offices: Yellowknife, Fort Smith and Whitehorse. The Office at Fort Smith also operates a monitoring station.

Financial Contributions

During 1978-79, further contracts under the Northern Communications Assistance Program were signed with Bell Canada and Canadian National Telecommunications (CNT) for basic local and long-distance telephone service to communities in the Northwest Territories. The contract with Bell Canada, worth \$1 274 900, covered service to the communities of Repulse Bay, Grise Fiord and Clyde. The contracts with CNT totalled \$889 170 and covered the rebuilding of the CNT tropo-scatter radio system between Hay River and Lady Franklin Point.

The Northern Communications Assistance Program, announced in January, 1977, provides about \$9 million in federal contributions over five years to cover the capital cost of communications facilities between communities required to bring reliable long distance telephone service to the Northwest Territories. Bell Canada and CNT, the two telecommunication companies in the territories, are investing a similar amount for local exchange equipment and operating the telephone circuits between communities. The long distance links are being provided by satellite ground stations or ground-based circuits. NCAP does not affect the Yukon because all Yukon communities already have basic telephone facilities.

Another agreement signed in December, 1976, is the Minimum Annual Revenue Guarantee (MARG) agreement between Bell Canada and the Government of Canada. Under this five-year agreement the Federal Government guarantees Bell a minimum annual revenue in return for the company continuing to provide satellite telephone service to Chesterfield Inlet.

Regional public hearings which the CRTC scheduled on Bell Canada's February 1, 1978, increase application were held in the Northwest Territories at Arctic Bay - Nanisivik, on April 17, 1978; Pond Inlet, April 18, 1978; and at Frobisher Bay on April 19, 1978. On the basis of these hearings, and others held elsewhere in the territory served by Bell Canada, the commission prepared its decision on the application.

On March 20, 1979, the CRTC approved an application by Charles A. Dent for a broadcasting licence for a new English language AM radio station at Yellowknife on the frequency 1240 KHz and with a power of 1 000 watts day and night. The commission indicated it would issue a licence to Mr. Dent upon receipt of documentation that the new company had been incorporated. The licence to be issued would expire March 31, 1984. The new station would be the first private commercial radio service to Yellowknife. The company would be locally-owned and operated. Its programming would be of specific relevance to area needs and interests, using local resources and talent.

Spence Bay, Northwest Territories, began receiving CBC radio and television service under the Accelerated Coverage Plan in July, 1978.

In October, 1978, the Pond Inlet Community Television Society, PIC-TV, began producing programs for local CBC-TV. PIC-TV obtained agreement and assistance from the CBC for local access to the transmitter and the Society obtained financial support from Canada Works, the Donner Canadian Foundation, the Clifford E. Lee Foundation and the Laidlaw Foundation. The local programs are now a regular feature and topics have included traditional skills, coverage of hearings into Lancaster Sound offshore drilling and Christmas festivities.

During 1978-79, Canadian National Telecommunications began implementation of its decision to set up CNT's north-west telephone operations as a separate profit centre within the CN corporation and establish its headquarters at Whitehorse. (See Northwest Telecommunications Inc.)

During 1978-79 Bell Canada installed additional long distance circuits at the following existing satellite earth stations: Baker Lake, Cape Dorset, Eskimo Point, Igloolik, Pond Inlet, Rankin Inlet, Nanisivik - Arctic Bay, Frobisher Bay and Sanikiluaq.

Five of Bell Canada's Inuit employees were given an installation and repair course in the Bell Canada Plant Training School in Montreal. One Inuit technician was upgraded from a Class 2 to a Class 1 cable repairman. Seven Inuit commercial department service representatives were given on-the-job training in Frobisher Bay. By the end of 1978-79, seven Inuit operators were working on Bell Canada's Frobisher Bay switchboard and the company was making an effort to recruit Inuit operators at the Ottawa switchboard. Two candidates were selected, but only one accepted the position. If Bell Canada's Ottawa operators encounter language difficulty in giving service to Inuit subscribers the operator can add an Inuit operator at Frobisher Bay.

Also during 1978-79, David Audlakiak of Bell Canada's commercial department visited all communities served by Bell in the Northwest Territories to explain billing and other aspects of telephone usage. Since the beginning of 1978, Bell Canada's Inuit subscribers have received facsimiles of their monthly bills in Inuktitut. Bell's latest trilingual telephone directory (Inuktitut, English, French) is a considerably improved version with maps and illustrations utilizing, where possible, the special dialect of the community involved. Translation was done by language experts at Laval University.

Plans for 1979-80

The Department of Communications will continue to give priority to development of more northern-produced and native language programming on the Canadian Broadcasting Corporation's Northern Television Service. One of the activities in this direction during 1979-80 will be further development of the Inuit Tapirisat of Canada's Anik-B pilot project, "Inukshuk".

The Secretary of State Native Communications Program will expire on March 31, 1980, and DOC will be involved in discussions regarding renewal.

DOC's Central Regional Office will again be involved in coordinating fieldworker projects in the Northwest Territories under Employment and Immigration's Summer Job Corps Program. The projects in 1979 are expected to create 65 summer jobs in the Northwest Territories.

Financial Contributions

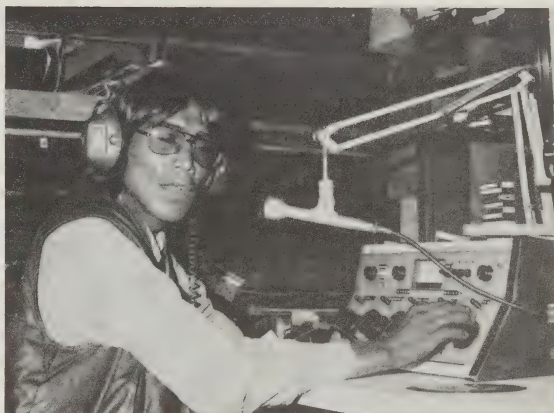
Further contracts with Bell Canada and Canadian National Telecommunications will be developed under the Northern Communications Assistance Program.

Improved Services

Incorporation of the Northwest Telecommunications Inc. as a wholly-owned subsidiary of CN is proceeding. The new company will be activated in the spring, 1979. Its plans for 1979-80 are described elsewhere in this publication under the section on Northwest Telecommunications Inc.

Bell Canada is planning a large circuit expansion program for the next few years to reduce service blockage to one per cent. At NWT earth station locations circuits will be added at the following sites: Clyde River, Igloolik, Baker Lake, Chesterfield Inlet, Repulse Bay, Whale Cove, Rankin Inlet, Eskimo Point, Cape Dorset, Pond Inlet, Nanisivik - Arctic Bay, Pangnirtung, Sanikiluaq, Frobisher Bay, and Hall Beach.

Bell provided Direct Distance Dialing on incoming calls to Frobisher Bay in December, 1978. Introduction of full DDD out of Frobisher Bay is scheduled for the fall, 1979.



Joe Grandjambe, Summer Job Corps Program Project Leader at Fort Good Hope, operates the controls at the local community broadcast station.

A new digital exchange switcher is to be field tested in Broughton Island. Coincident with modernizing Bell's local switching function, this DMS-10 will help provide DDD to remote sites. Plans are being established to convert old existing equipment to the DMS-10 with DDD at all remote sites in the North.

During 1979-80, Bell Canada's two additional Inuit candidates will receive the standing Bell Canada course on plant operations, installation and repair at Montreal. Five commercial department service representatives will be given the regular service representative training course in Frobisher Bay.

David Audlakiak will visit all community leaders again. He will also establish contact with Inuit Tapirisat of Canada and explain to Inuit subscribers in Frobisher Bay the new DDD service which will start during 1979. ■

Crown Assets Disposal Corporation

CADC

Responsibilities

Crown Assets Disposal Corporation sells surplus assets of government departments and agencies located in northern Canada. It also conducts the sales of United States Government surplus property from DEW Line sites and other northern establishments. The corporation is, by agreement, the agent of the Government of the Northwest Territories in the sale of its surplus assets.

Review 1978-79

The corporation sold United States Government surplus material at many sites along the DEW Line.

Plans for 1979-80

A considerable quantity of vehicles and heavy equipment remains to be sold on behalf of the United States Government. The corporation is planning a marketing strategy so that northern entrepreneurs and other individuals are aware of the availability of this equipment in the North. ■

Eldorado Nuclear Limited

ENL

Eldorado Nuclear Limited, the federal Crown corporation engaged in the exploration, mining and refining of uranium for use in generation of electricity, participated in five field exploration programs in the Mackenzie District of the Northwest Territories and in the Yukon Territory during 1978-79.

Eldorado anticipates a similar level of exploration activity in fiscal year 1979-80. ■

Department of Energy, Mines and Resources

EMR



Close-up view of coring operations showing details of core barrels, extension unit and the motor. Photo: Geological Survey of Canada.

Geological Survey of Canada

Responsibilities

The Geological Survey of Canada provides a comprehensive inventory and understanding of Canada's geological framework. Its activities determine the mineral and energy resource potential available to Canada and include studies of land capability, geology of urban areas and natural environment conservation.

The Geological Survey contributes to three programs of the Department of Energy, Mines and Resources. Earth Sciences Service Program, the Minerals Program and the Energy Program.

The first program is concerned with obtaining information about the geological framework of Canada, its properties, evolution and development. Information on bedrock geology is obtained through systematic surveys, regional studies and national compilations and is used for identifying resources and making appraisals of non-renewable resources. Similar studies are carried out to obtain information about the nature and evolution of the Canadian landscape, its surficial materials, terrain properties, processes, hazards and capabilities. Such information is essential when measuring the effects of energy and mineral resource development.

Minerals and Energy Programs are concerned with resource identification and estimation. Attention is given to identifying areas likely to contain mineral and fossil fuel resources. Estimates of the amount and quality of energy resources are made each year but those for mineral commodities, because of the complex calculations involved, are made less frequently.

Review 1978-79

The programs of EMR in the field of earth sciences called for increased effort on physical environment studies, especially those related to major energy development; continued geological studies toward improving understanding of the resources base; and assessment of the options available for nuclear waste disposal.

The second covers a large part of the Geological Survey's activities including regional bedrock mapping, shared-cost national geochemical and airborne radiometric and magnetic surveys, and the National Aeromagnetic Program. The larger part of all studies were carried out north of 60°, where the present level of information is Canada's lowest. Northern development in the next few decades demands this information.

Preliminary results of the 1978 field season were released in "Current Research, Part C" (November, 1978) and "Current Research, Part A" (January, 1979). The first publication contained 12 items on the North, the second 28.

For the third successive year studies of the Foxe Fold Belt were continued on Baffin Island to establish the relationships of the Precambrian sedimentary, volcanic and plutonic rocks to the rocks of the Mary River Group - host to the large Mary River iron deposits. In 1978 study was centred on the east Baffin coast and maps at the scale of 1:250 000 are in preparation. No mineral deposits of economic interest were found but some of the pegmatites cutting basement rocks in Ekalugad Fiord were found to have higher-than-background uranium radioactivity. A project initiated in 1977 to make a cross-section at a scale of 1:50 000 across the southern margin of Foxe Fold Belt was continued near DEW line site Fox 3. Included in the succession is an amphibolite and ultramafic rock unit that contains minor amounts of massive sulphides (pyrite and chalcopyrite).

As part of the systematic mapping program the metamorphic rocks on the south coast and part of the north coast of eastern Devon Island were mapped. When finished, this project will mark the completion of the reconnaissance mapping of the northern Churchill Structural Province.

Studies of the Proterozoic rocks of northern Baffin Island, begun in 1977, were continued. In addition to the Nanisivik lead-zinc deposit, the region contains other occurrences of base metals. During a three-month period in 1978 an area southeast of Paquet Bay, 50 km south of Pond Inlet, was mapped at 1:50 000 and 40 stratigraphic sections were measured. The results of this study will be valuable in future mineral assessments.

The unmetamorphosed late Precambrian sediments and volcanics that comprise the Dubawnt Group in Keewatin are of interest because of their wide distribution and are host to uranium and minor base and precious metal mineralization. Two parts of Tebesjuak Lake map area (66 0) were examined in 1978 preparatory to the start of 1:250 000 mapping in 1979. The geological record is complex. It reflects continental sedimentation followed by the deposition of a variety of volcanic flows and volcanoclastic sediments and ends with the intrusion of syenite dykes and sills.

As part of a study designed to define the basement rocks of the Great Bear Batholith, two areas in map sheets 86D and 85N were mapped in 1978 at 1:125 000. A belt of quartzite, that rests unconformably on the batholith, contains localized uranium mineralization.

Mapping of anorthosite-granulite complex northeast of Baker Lake continued despite an unseasonably cold and snowy season. The granulite is generally devoid of economically-interesting minerals. Slightly radioactive accessory minerals are found with some of the plutonic rocks but no occurrences of economic value were found.

During 1978 mapping of the more distant, rugged and inaccessible parts of the St. Elias Mountains in Yukon continued as part of a program designed to determine the stratigraphy, structure and metamorphism of the area and to assess its mineral potential.

Pelly Mountains and adjacent parts of the Yukon Plateau are considered to have a good potential for metallic mineral deposits and in 1973 the Geological Survey began studies in the area designed to provide information on the relationships between stratigraphy, structure, sedimentary facies and mineral deposits. An interesting aspect of the area is the presence of numerous outliers of sheared clastic rocks that are parts of a once continuous sheet that extended hundreds of kilometres northwest and southeast along a line that roughly parallels the Tintina Valley. Some of the rocks in the outliers are Upper Triassic in age and as rocks equivalent in age (the Lewes and Laberge groups) contain copper, these rocks too should be considered in exploration programs.

An on-going project of the Geological Survey is a study of the metallogeny of the northern Cordillera. The aim of this study is to examine large scale controls and distribution of known mineral deposits as an aid to assessing the mineral potential of the area. In recent years significant stratiform base metal mineralization has been discovered in Lower Paleozoic sedimentary rocks at three localities in Yukon and Mackenzie, the Woodside and Maxi, southwest and southeast of Ross River, and the Logan Mountains just across the Yukon-Mackenzie border about due east of Ross River. An interesting aspect of the Logan Mountains occurrence is the high radioactivity in a cherty and carbonaceous 100 m-thick black shale horizon that is host to the massive sphalerite-galenite-pyrite occurrence.

Of equal interest are the skarn deposits in southern Yukon, southwestern Mackenzie and northern British Columbia which are host to a variety of ore elements including tungsten, copper, zinc, lead, silver, molybdenum and tin. Studies of these deposits were mentioned in the 1977-78 report. During the 1978 field season selected occurrences were revisited for more detailed observations and geological mapping. At present only tungsten-copper skarns are of economic importance. There are lead-zinc occurrences but none of size to be economically worthwhile has been found. Tin-bearing skarns have been discovered only recently and their economic significance is as yet unknown.

Interest in uranium continues at a high level and the Geological Survey continued studies of specific occurrences. It also participated in major airborne survey projects. A reconnaissance survey was made of Paleozoic and Mesozoic continental sandstones on Melville and Ellef Ringnes Islands and of the Pennsylvanian anhydrite-halite diapirs that intrude these rocks. Although the sandstones did not yield any uranium occurrences the possibility remains undiminished.

Significant signs of radioactivity were found within the Dumbbells Dome on Ellef Ringnes Island and eventually extensive, low grade uranium mineralization was located in Pennsylvania limestone breccias. It was found that stream waters analyzed for uranium provided a particularly useful exploration tool. On Melville Peninsula widespread uranium enrichment in lake sediments and waters was traced to felsic igneous rocks that intrude the Precambrian Penrhyn Group metasedimentary rocks. The study suggests that although the Penrhyn unconformity is not a likely source of uranium mineralization, a younger unconformity in the northwestern part of the area studied may have a greater potential as it overlies a uranium enriched basement. The uranium content of the basement rocks appears to increase towards the unconformity with possible enrichment along fractures, possibly due to remobilization.

As a result of regional stream sediment geochemical surveys carried out in the northern Cordillera in 1977 extensive and intensive Pb, Zn and Ag anomalies were identified, mainly in areas underlain by Proterozoic carbonate and clastic rocks. It was not known whether these reflected real bedrock mineralization and in 1978 an area immediately east of Gillespie Lake, Yukon, was selected for detailed investigation. The anomalies did reflect actual mineralization and the ground studies identified the particular structures in which it occurred. The validation of the anomalies disclosed by the earlier, regional study opened up a large area with base metal potential in central Yukon.

Numerous studies in the field of terrain sciences were undertaken. In addition to adding to the inventory of information on surficial materials, many of these studies have immediate application to siting of transportation corridors, including inter-island connections.

Hummocky ground (nonsorted circles) is a widely-distributed type of patterned ground in the lower Mackenzie Valley and the tundra of the western Arctic coast. Field studies have been carried out in both summer and winter since 1963 at Garry Island, NWT, with the result that the complicated interrelated processes that cause these fractures are now understood. The results have direct application to use of such terrain.

The disruption of bedrock masses in permafrost environment is another process that must be considered in engineering projects. It is also a major factor in landform evolution. To better understand the process of bedrock heaving 25 sites in central Keewatin, in Boothia Peninsula, and on Somerset, Bathurst and Melville islands were studied. It appears that a region subject to freeze-thaw cycles will not necessarily exhibit bedrock heave. It is suspected that the presence of permafrost is essential to give rise to a closed hydrologic system. Laboratory studies to substantiate the field conclusions are in progress.

The Denali Fault in the Yukon is a major break in the earth's crust. Movement during the Cenozoic Era (up to 65 million years ago) was as much as 350 km. Parts of the fault in south-central Alaska are active at the present time but no movement appears to have taken place on the fault in the Yukon in the past few thousand years. In response to a proposal that a natural gas pipeline be built from Prudhoe Bay through Canada to the midwestern United States, the Geological Survey in 1978 began a project to determine what, if any, movement has taken place in the past two million years along the Shakwak and Dalton segments of the Denali Fault. This is of major concern because for 180 km the proposed pipeline route parallels the Shakwak Fault. Preliminary results of the study are given in GSC Paper 79-1A, p. 169-178. As already noted no evidence of recent movement was found. However as at least two large earthquakes (magnitudes 6.0 and 6.5) have occurred in the area in the past 80 years, it is obvious that there is a seismic risk. An improved seismic network is required to establish the relationships between present-day seismicity and the geological framework of southwest Yukon.



ATC-drill used to gather ground ice and groundwater data from unconsolidated sediments in areas containing permafrost. Photo: Geological Survey of Canada.

In support of the Uranium Reconnaissance Program (URP) airborne gamma-ray spectrometry surveys of 34 1:250 000 map areas were flown in southern District of Mackenzie and the northern parts of the adjacent provinces. As part of the government plans to reduce expenditures, GSC — was directed in mid-summer to reduce drastically the contract flying aspect of URP. This cut did not affect the 1978 program but will be reflected in the coming year. It was felt that uranium deposits sufficient to meet Canada's short-term needs have been identified.

Production and compilation of 1:50 000 aeromagnetic maps continued. For an area on Melville Peninsula 52 manuscript maps were accepted and an additional 48 were published.

As part of the National Geochemical Reconnaissance, lake sediment and water surveys were carried out in Yukon and in Baffin Island. The results of the surveys will be released as maps in the Open File series.

The results of these surveys commonly have immediate and direct application to resource appraisal in identifying and eliminating areas which are likely barren of economic deposits.

Plans for 1979-80

Of the 410 projects to be carried out by the Geological Survey of Canada in 1979-80, 150 will involve work in areas north of 60°, and 60 of these will have a field component in 1979-80.

Field work is expected to be completed on Operation Borden, a study of the stratigraphy sedimentology and economic potential of the Upper Proterozoic rocks of northern Baffin and Bylot Islands and of the relationships between these strata and the underlying basement gneisses. Field work will be completed in reconnaissance geology of northern Ellesmere Island, on a project studying the structure and stratigraphy of western Devon Island and Vendom Fiord map-area, Ellesmere Island.

A synthesis of upper Paleozoic stratigraphy in Melville Island and northern Ellesmere Island will be completed. In these areas lithologies and fossil successions will be compared with better known successions elsewhere in the basin. Field work will continue to complete mapping as part of a study of the geology of the Foxe Fold Belt, Baffin Island. This

area has potential in iron and base metals and the economic potential of the region will be evaluated. Field study of the sedimentology and stratigraphy of the Helikian sediments and adjacent gneisses in the Fury and Hecla Strait area will begin in 1979-80. The data collected will yield a 1:250 000 map of the strata and a short paper. Work will continue on the stratigraphy and sedimentology of the Tertiary sediments of the eastern Arctic and a four-week field season is planned for Ellesmere Island.

A reconnaissance study of the Fort Smith-Hill Island Lake region of the District of Mackenzie is being undertaken in order to plan a regional study. Map areas are in need of revision at 1:250 000 scale. During the 1979 field season work will continue on the geology of Thirty Mile Lake and Tebesjuak Lake in order to interpret the geology of the area to the standard of 1:250 000 mapping. In addition, the tectonic setting of the fluorite-bearing granites in the Dubawnt group rocks and their relationship to volcanism will be examined. Work will begin in the Kamilukuak Lake area to map the bedrock geology at the standard of modern 1:250 000 scale mapping. Emphasis will be placed on the Dubawnt Group rocks, their extent, lithology and relationship to basement rocks. A 1:250 000 scale geological mapping project in the Healey Lake area between the Slave and Churchill provinces will continue in an effort to improve the understanding of the Thelon front, which separates the two provinces. A regional synthesis aimed at correlating various Archean and Proterozoic rocks in the Bear and Slave province using paleomagnetic, geochronologic, geochemical and other methods will continue in the District of Mackenzie. This project is building a bank of geologic economic and geochronological data for future compilations. Field mapping will be completed of the Hepburn Batholith in the Hepburn Lake map-area.

In addition the field surveys, maps at a scale of 1:250 000 and reports will be prepared in Operation Porcupine, a critical evaluation of the structural geometry and stratigraphy of northern Yukon and western District of Mackenzie. The nature, origin, and mechanics of the deformation have a bearing on the hydrocarbon and mineral potential of the region. A bedrock mapping project will begin in Nahanni map-area of Selwyn Basin with litho-geochemical studies being undertaken in 1979. The intent is to develop a fully-integrated multi-disciplinary study involving surficial, geochemical, bedrock and mineral deposit studies in 1980. Work will also continue on a biostratigraphic study of Mesozoic rocks in the Intermontane and Insular Belts of the Canadian Cordillera with a final edition of the Tectonic Assemblage map of the Canadian Cordillera to be produced at a scale 1:2 000 000. Field work in 1979-80 will complete the main reconnaissance of Laberge and Carmacks map areas. This study will contribute to an understanding of Cordilleran tectonics and will provide two updated 1:250 000 maps. Two months of field work are also planned in the Mackenzie Mountains to carry established stratigraphy southwestward into the shale basin and to carry shelf units southeast. This work is part of a project studying lower Paleozoic basin to platform relationships in the Cordillera. Field work will be completed on Operation Mt. St. Elias in a study to determine the stratigraphy, structure, metamorphism and relationship of intrusive and volcanic rocks. A two-month field season is planned to extend Precambrian studies south in a study of the Helikian and Hadrynian stratigraphy of the eastern Cordillera and Interior Platform.

Field samples will be collected as part of a Quaternary geology-terrain inventory study of Boothia Peninsula, northeast Keewatin, and Somerset and Prince of Wales Islands, and a 1:500 000 map and report will be completed on the Boothia Peninsula. Mapping will be completed on a surficial geology and Quaternary stratigraphy study in the north Baffin-Bylot areas and several hundred samples for geochemical and petrologic studies will be collected. Sampling will be done on Lougheed Island and Churchill areas as part of a study of vegetation distribution and relationships to surficial materials in the Arctic. Vegetation reports will be completed on the Arctic islands. Field work will continue on Ellesmere Island in a study of the Quaternary geochronology of the Arctic Islands. The distribution of Dubawnt erratics on Coats and Mansell Islands will be examined and there will be additional study of glacier sedimentation on Bylot Island to understand glacier sedimentation processes as they apply to drift prospecting. Field work will continue in a study of slope processes and cryogenic movements in the Arctic Islands, with additional data being collected on the rates of slope movement. Instrumentation will be installed in new terrains. This study provides data on slope processes in areas of potential mineral and hydrocarbon development. Observation of growth of permafrost, ice wedges and active layer development in a drained lake near Tuktoyaktuk will take place in the 1979 field season in an investigation of the processes involved in permafrost and ground ice growth. Field work will continue on hydraulic, morphologic, and morphometric studies of selected rivers along the Mackenzie Highway. The impact of construction of the highway on channel and hydraulic characteristics of the same river will also be assessed. Field sampling will take place in an area from Baker Lake to Arctic coast as part of a study of the geological characterization of Arctic lakes, their sediment properties and sedimentary processes. Monitoring of mudboil movement and development, and investigation of downslope movement of water during periods of high activity will continue in central Keewatin. The study area straddles the proposed Polar Gas pipeline route and will provide terrain data for the assessment of that route as well as information for use in future development projects. Field observations will continue in a geotechnical study of rock heave in the central Arctic. This study also will provide information pertinent to the Polar Gas pipeline. Field work will be completed on a study of the Quaternary geology of the Mayo-McQuesten area. The information gained on surficial materials and landforms will provide background information for land use planning, engineering and mineral development. Collection of field data will be completed on a study of the Quaternary stratigraphy of Old Crow Basin and Porcupine River Valley. This study is part of the National Museum Yukon Refugium Project. Field mapping will continue at a scale of 1:250 000 as part of a surficial geology and terrain evaluation of the southern Yukon. Field work will continue in a structural geology-geomorphology study of the southwest Yukon. The study will determine the nature and scope of late Quaternary tectonic activity along the Denali Fault and will identify and lead to the interpretation of landslides and other potential terrain hazards to provide information pertinent to industrial development, including pipeline and road construction and maintenance.

Mesozoic studies will take place in northern Sverdrup Basin and Jurassic to Tertiary sections will be measured and collected in northern Ellesmere Island in a study contributing to establishment of a biostratigraphic zonation scheme for the Mesozoic and Tertiary of the Mackenzie Delta - Beaufort Sea regions. A reconnaissance study of Triassic foraminifera in

eastern Sverdrup Basin will begin with field work in 1979. Detailed field stratigraphy and biostratigraphy will be carried out in the Yukon to refine understanding and interpretation of Triassic events and their effect on resource potential. Field work will continue in the Margaret Lake area, Yukon, to correlate Silurian and Devonian strata and to refine coral taxonomy and to compare coral biostratigraphy with other fossil groups. Jurassic rocks are known to have potential as hydrocarbon sources in Eagle Plain and Richardson Mountains, and well cuttings from more westerly and northerly regions will be examined to identify fossil zones and to compare hydrocarbon potential. Field work will also be carried out in the vicinity of Old Crow Flats.

Sampling will be completed in 1979 on a project studying paleomagnetism of Proterozoic to Devonian strata across Boothia Arch. The results from these rocks and those previously studied on Somerset Island will be published in early 1980.

Aeromagnetic data on the Coppermine area will be compiled in 1979, in support of mineral exploration, geological mapping and radioactive waste disposal programs. Marine magnetic survey data from eastern Amundsen Gulf will be compiled and merged with earlier work, followed by final mapping and interpretation. Field work will be carried out in the Labege, Glenyon and Carmacks areas of the Yukon and a report will be prepared on the stratigraphy, sedimentology and coal potential of the Bonnet Plume Basin.

The focus for 1979-80 field work in the national geochemical reconnaissance will be the Yukon Territory where there has been a particularly favourable response from the mining industry. A study of the regional geochemistry of the Yukon will continue to determine the mineral potential of part of the Yukon and to assess the value of various geochemical sample media in the development of appropriate geochemical methodology. Field work will also be carried out on the Fury and Hecla Strait area as part of a regional geochemistry study of the northern Canadian Shield. This study is to determine the factors affecting the distribution of trace elements within bedrock, overburden and stream and lake waters and sediments.

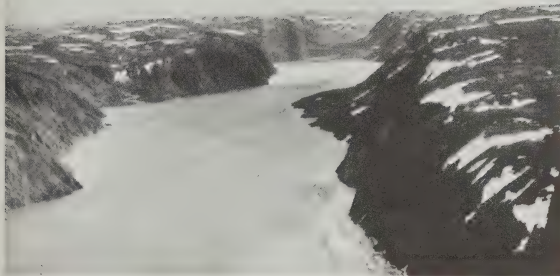
A study of the metallogeny of the northern Canadian Cordillera will continue with field work in 1979-80 being done in the Nahanni and Kechikan areas. In these areas studies of shale-hosted and volcanogenic deposits in Road River rocks and stratiform base metal-barite deposits in Devonian-Mississippian shales will continue. Field studies will be carried out on a project to provide a metallogenic basis for the evaluation of the mineral resources of the northwestern part of the Canadian Shield.

Assessments of oil and gas resources in the Arctic will continue as part of the evaluation of Canada's Petroleum Potential. Field work north of 60° in areas as yet undecided, and subsequent laboratory studies, will continue.

Reports relating to the Northwest Territories and Yukon Territory published by the Geological Survey in 1978-79. Some titles have been abbreviated.

Memoirs

386 Geology of King Christian Island, District of Franklin; H.R. Balkwill and K.J. Roy; 28 p.



East along Fitz Roy Inlet, Somerset Island, showing the effects of glacial erosion. Photo: Geological Survey of Canada.

Bulletins

253 Albian foraminifera of the Yukon Territory; T.P. Chamney; 62 p.

266 Carboniferous biostratigraphy and correlation, north-eastern British Columbia and southwestern District of Mackenzie; E.W. Bamber and G.L. Mamet; 65 p.

276 Stratigraphy and correlation of Lower Paleozoic formation, subsurface of Cornwallis, Devon, Somerset, and Russell Islands, Canadian Arctic Archipelago; Ulrich Mayr; 55 p.

302 Devonian stratigraphy, west-central Ellesmere Island, Arctic Archipelago; H.P. Trettin; 119 p.

Papers

76-10 Carbonate-evaporite cycles in the Silurian rocks of Somerset Island, Arctic Canada; G.E. Reinson; 13 p.

77-2 Age determinations and geological studies-K-Ar isotopic ages, report 13; R.K. Wanless, R.D. Stevens, G.R. Lachance and R.N. Delabio; 60 p.

77-7 Geological Survey of Canada radiocarbon dates XVII; J.A. Lowdon, I.M. Robertson and W. Blake, Jr.; 25 p.

77-18 Causes of Cretaceous oscillations of sea level in Western and Arctic Canada and some general geotectonic implications; J.A. Jeletzky; 44 p.

77-32 Geological interpretation of an airborne gamma-ray spectrometer survey of the Hearne Lake area, Northwest Territories; A.R. Newton and V.R. Slaney; 14 p.

77-35 Re-definition and subdivision of the Rapitan Group, Mackenzie Mountains; G.H. Eisbacher; 21 p.

78-10 Metamorphism in the Canadian Shield edited by J.A. Fraser and W.W. Heywood; 1978; 29 papers (many dealing with NWT) 367 p.

78-12 An assessment of hydrocarbon source rock potential of the Canadian Arctic Islands; T.G. Powell; 82 p.

78-14 Upper Proterozoic sedimentary and volcanic rocks of northwestern Baffin Island; G.D. Jackson, T.R. Iannelli, G.M. Narbonne and P.J. Wallace; 15 p.

78-1B Current Research, Pt B; contains 25 short scientific and technical reports and 14 short scientific and technical notes of which 11 and 6 respectively are concerned with the North.

78-1C Current Research, Pt C; contains 15 short scientific and technical reports and 10 short scientific and technical notes of which 9 and 3 respectively are concerned with the North.

79-1A Current Research, Pt A; contains 57 short scientific and technical reports and 13 short scientific and technical notes of which 24 and 4 respectively are concerned with the North.

"A" Series Maps

1449A Geology, Buchan Gulf-Scott Inlet, District of Franklin, compiled by G.D. Jackson, W.C. Morgan and A. Davidson; scale 1:250 000.

1450A Geology, Steensby Inlet, District of Franklin, compiled by G.D. Jackson, W.C. Morgan and A. Davidson.

1451A Geology, Icebound Lake, District of Franklin, compiled by G.D. Jackson, W.C. Morgan and A. Davidson.

1458A Geology, Conn Lake, District of Franklin, compiled by G.D. Jackson and W.C. Morgan.

Open Files

492 Evaluation of the regional mineral potential (non-hydrocarbon) of the western Arctic region.

518, 519 and 520 National Geochemical Reconnaissance releases NGR 29-1977, 30-1977 and 31-1977; Regional stream sediment and water geochemical reconnaissance data, central Yukon Territory.

521A or B and 522A or B National Geochemical Reconnaissance releases NGR 32A-1977 or 32B-1977, 33A-1977 or 33B-1977; Regional lake sediment and water geochemical reconnaissance data, Melville Peninsula, Northwest Territories.

524 Results of analyses of rock specimens from Devon formations; west-central Ellesmere Island, Northwest Territories; H.P. Trettin.

527 Geology and limnology of Kluane Lake by Terrain Analysis and Mapping Services Limited.

535 Geology of the Sloan River map-area (86K) District of Mackenzie, NWT; P.F. Hoffman.

537 A structural reconnaissance of eastern Devon Island, Arctic Archipelago; R.L. Christie.

538 Surficial materials, southern Ellef Ringnes and King Christian Islands; NWT; D.A. Hodgson.

539 Surficial geology, southern Yukon; R.W. Klassen.

541 Surficial materials and vegetation, Amund Ringnes and Cornwall Islands, District of Franklin; D.A. Hodgson and S.A. Edlund.

543 Geology of the Nonacho Basin, District of Mackenzie; J.C. McGlynn.

544 Geology, Borden Island, District of Franklin; H.R. Balkwill.

569 The micropaleontology, palynology and stratigraphy of the Panarctic Tenneco Robert Harbour K-07 well; Robertson Research (North America) Limited.

570 The biostratigraphy of the Dome Arctic Ventures Sutherland O-23 well; Robertson Research (North America) Limited.

571 The micropaleontology, palynology and stratigraphy of the Panarctic, Dome, Tenneco et al. Louise O-25 well; Robertson Research (North America) Limited.

576 A preliminary report on resinite — a potential petroleum source in the Upper Cretaceous/Tertiary of the Beaufort-Mackenzie basin, Northwest Territories; L.R. Snowdon.

577 Surficial geology, Banks Island, Northwest Territories; J.S. Vincent (geology and geomorphology) and S.A. Edlund (vegetation).

578 Geological map of the Laberge map area (NTS 105E), Yukon Territory; D. Tempelman-Kluit.

584 Biostratigraphic zonation, Shell Unak B-11 well, Northwest Territories; Austin and Cumming Exploration Consultants, Calgary, Alberta.

585 Biostratigraphic zonation, Shell Kipnik 0-20 well, Northwest Territories; Austin and Cumming Exploration Consultants, Calgary, Alberta.

587 Geological map of Dowdell Peninsula, Northwest Territories; M. Feniak

588 Stratigraphic correlations, biostratigraphic zonation, Gulf-Mobil Ikhlil 1-37; Austin and Cumming Exploration Consultants, Calgary, Alberta.

589 Stratigraphic correlations, biostratigraphic zonation, Gulf Imp. Shell Titalik K-26; Austin and Cumming Exploration Consultants, Calgary, Alberta.

590 Stratigraphic correlations, biostratigraphic zonation, Imp. Nuktak C-22; Austin and Cumming Exploration Consultants, Calgary, Alberta.

591 Stratigraphic correlations, biostratigraphic zonation, Shell Niglitngak H-30; Austin and Cumming Exploration Consultants, Calgary, Alberta.

592 Stratigraphic correlations, biostratigraphic zonation, Imp. Pullen E-17; Austin and Cumming Exploration Consultants, Calgary, Alberta.

593 Palynology of the interval from 818 to 1300 m of the Panarctic Tenn. Robert Harbour K-07 well, Northwest Territories compiled by Institut National de la Recherche scientifique.

594 Surficial geology, southern Yukon-northern British Columbia; R.W. Klassen and S.R. Morison.

Earth Physics Branch

Responsibilities

The Earth Physics Branch provides geophysical information concerning the configuration, evolution, structure and dynamical processes of the solid earth and hazards associated with geophysical phenomena of the Canadian landmass. The branch carries out earth physics service activity in five scientific sub-activities: the seismological, geothermal, geomagnetic, gravity and geodynamics services.

Seismological Service

Responsibilities

The Seismological Service of the Division of Seismology and Geothermal Studies determines the parameters of all significant earthquakes in northern Canada and provides assessments of earthquake risks. Research on the structure and properties of the Arctic lithosphere is conducted by deep-sounding experiments, by surface wave dispersion studies and through study of seismic wave velocities from Arctic earthquakes. Studies of the source mechanisms of earthquakes provide data for investigations of seismotectonic processes and for earthquake-resistant structure design. A network of seismograph stations is maintained in northern Canada and field experiments on deep seismic sounding are conducted.



Chinese scientists participating in EPB's permafrost jet-drilling program in the Mackenzie Delta. Photo credit: Earth Physics Branch.

Review 1978-79

Standard seismological observatories were operated at Alert, Mould Bay, Resolute, Frobisher Bay, Inuvik and Yellowknife and regional observatories continued operation at Baker Lake, Whitehorse and Igloolik. The latter required cooperation from the staff of the Igloolik Research Laboratory. The Yellowknife seismological array continued operation and the automatic data transfer facility continued to send digital information on detected seismic events to the Ottawa computer. In a joint venture with Foothills Pipe Lines (South Yukon) Ltd., three new regional seismological observatories were established in the southwestern Yukon, near Dezadeash, Kluane Lake and Koidern, to monitor low level seismicity in the region of the proposed ALCAN pipeline route.

Seismic data on global events are relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. The Yellowknife detection bulletin is transferred by computer link to research groups in the US and UK.

Routine analysis of earthquakes in and near the Canadian North continued. Bimonthly lists of all earthquakes are prepared within about six months of their occurrence and findings are published. Rapid determinations are made of earthquakes of special concern or scientific interest, such as the magnitude seven earthquake in the Alaska-southwestern Yukon border region February 28, 1979. This earthquake, the largest to affect northern Canada since the 1964 Prince William Sound, Alaska, earthquake, was centred in the St. Elias Mountains west of Whitehorse, about 30 km inside the Alaska border. The shock was felt strongly throughout the southwestern Yukon and northeastern British Columbia to distances of about 500 km from the epicentre, but no serious damage was reported. Three magnitude five aftershocks followed within two days.

A seismicity survey of northern Baffin Island was conducted in the fall of 1978 with temporary seismograph stations operated at Pond Inlet, Cape Adair and Clyde River between September 8 and October 7. The field period was chosen to include the time during which three ocean-bottom seismographs were operated on the sea floor of the northwestern Baffin Bay by the Atlantic Geoscience Centre. Data from the land stations have been used to compute preliminary locations for 20 earthquakes, the majority centred near Buchan Gulf. Analysis of these and the ocean-bottom data are continuing.

Analysis of data from the three seismograph stations installed near the proposed ALCAN pipeline route, and from other stations of the Canadian and Alaskan networks, has produced accurate epicentre and magnitude parameters for about 50 low magnitude earthquakes in the southwestern Yukon. These quakes could not have been located prior to the installation of the new stations. These data are being accumulated in a three-year program to assess the seismicity in relation to geological features along the pipeline route.

A seismicity model has been developed for northern Canada and adjacent regions that uses available information on seismicity and geological and tectonic controlling features to specify the extent of earthquake zones and their expected magnitude recurrence rates. In some regions, such as the southwestern Yukon and southeastern Alaska, the known tectonics provides reasonable constraints, but in others the forces are too poorly known to allow a clear picture of the locations and rates of future earthquakes.

Interpretation of the crustal refraction data obtained on the Beaufort Sea ice in 1976, in conjunction with the AIDJEX program, has revealed that the crustal section at the northern extremity of the survey area is typically oceanic and overlain by a thicker than normal sedimentary layer of about 3 km. The total crust thickness increases dramatically approaching the Continental Rise off Alaska. A velocity anisotropy of about 4 per cent in the upper mantle supports a tectonic concept of oceanic spreading perpendicular to the coastline of Alaska.

A synthesis of refraction data recorded in 1972 and 1973 in the central Sverdrup Basin has shown major features that correlate well with the regional geological structure. Models indicate a crust which thins from near 40 km beneath the eastern Sabine Peninsula to 32 km west of King Christian Island. Between Melville and Lougheed Islands a significant loss of seismic energy and the focal depths of earthquakes in the region suggest a major northeast-trending structure and lateral heterogeneities that may extend to near-mantle depths.

Plans for 1979-80

The present seismological observatories and the Yellowknife seismological array will be maintained. These facilities will continue to contribute data to Canadian and international research programs.

Analysis and publication of information on earthquakes occurring in northern Canada will continue. Detailed studies of the larger Canadian earthquakes will continue. A major effort will be made in cooperation with the US Geological Survey to undertake a comprehensive analysis of the February 28, 1979, Alaska-Yukon border earthquake.

Studies of low magnitude earthquakes in the southwestern Yukon, in the vicinity of the proposed ALCAN pipeline route, will continue. A special survey using ten portable seismographs is planned for June-July, 1979, to detect and locate microearthquake activity near the south end of Kluane Lake to assess the locations of the accurately-located, very low magnitude events in relation to mapped geological structures.

The analysis of the Baffin Island and Baffin Bay data will be completed in cooperation with the Atlantic Geoscience Centre.

The research on seismic risk mapping will assess a variety of strong seismic ground motion parameters of relevance to engineering applications. The end product will be a series of contour maps to display these parameters at selected risk levels. They will be used for the next version of the Seismic Zoning Map of Canada. These results will be particularly important for northern Canada because the present (1970) zoning map was based on very sparse data for the northern regions.

The seismic refraction components of the LOREX 79 study of the Lomonosov Ridge in the vicinity of the North Pole will be conducted during May, 1979. Two 250 km refraction profiles are planned.

Geothermal Service

Responsibilities

The Geothermal Service of the Division of Seismology and Geothermal Studies determines the thermal regime of the Canadian landmass as related to geotectonics, permafrost distribution and characteristics, the potential for geothermal energy development and thermal properties of earth materials. Field measurements of subsurface temperatures and laboratory measurements of the thermal and heat generation properties of earth materials provide the data base.

Review 1978-79

Data temperatures from deep northern boreholes continued with considerable emphasis placed on the Mackenzie Delta and Tuktoyaktuk Peninsula. The results have been published in a fifth volume of the northern data collection, the first in a bilingual format, which lists a total of 100 permafrost thickness determinations based on thermal data. Of these, 40 are in the western Arctic where early hydrocarbon production is anticipated. Information derived from successive temperature measurements in drill holes has been used to determine the probable degradation of surrounding permafrost by hot hydrocarbons produced from greater depths and to develop ameliorating measures. These results have been published. An analysis of subsurface temperatures and heat flows for a group of mining drill holes in northern Quebec has provided information on the thermal history and stability of the thick permafrost in the eastern Arctic. Although permafrost seems to have warmed over the past few decades at shallow depths, total permafrost thickness is increasing.

The possible occurrence of natural gas hydrates in and below the permafrost, both on and offshore, has been of increasing concern to northern drillers, to operators concerned with eventual production through such zones. In the long-term it may be an additional, if unconventional, source of natural gas. A paper was presented at the Third International Permafrost Conference. Workshops on hydrates were organized for the meeting and for the annual Permafrost Workshop was hosted by the NRC Permafrost Subcommittee. Papers presented will be published in the coming year. Interest in hydrates is growing in Canada and the US.

Hydraulic drilling programs were carried out in the spring of 1978 to extend the offshore shallow permafrost information to the east and to investigate the permafrost distribution beneath an arctic lake. A total of 28 holes to 60 m depth have been drilled and instrumented in the Mackenzie Delta front from the Mackenzie Canyon east to the Kugmallit Trough. Supporting studies of water temperatures, salinities and seismic profiling were conducted from a coastguard ship "Nahidik" during the summer of 1978. After completion of the preliminary drilling an unfrozen zone, 30 m thick beneath the centre of the lake, was found. The lake was drained to the ocean and the formation of permafrost in the former lake bottom is now being monitored. The lakebed is being used as a large-scale experiment to increase understanding of permafrost processes. This information is urgently needed for use in the design and construction of proposed arctic pipelines.

The geothermal group produced 42 publications concerned with the environmental-social program on Northern Pipe Lines. This program has now been terminated, but small projects are continuing through use of Energy Research and Development - Northern Transportation funds. In 1978 these projects were all concerned with moisture migration properties of permafrost such as the hydraulic conductivity, isotope mobility and unfrozen water content.

One of the current concerns involves the stability of permafrost in northern Canada over the lifetime of major engineering developments. Evidence collected to date suggests that changes of 1 to 2° C in ground temperatures over such time spans are not unusual. Such temperature changes will have dramatic effects in permafrost landscapes, reactivating thaw ponds, ice wedges etc. Shallow drill holes at several northern sites, including sites instrumented at Alert, on northernmost Ellesmere Island in 1978, are being used in an effort to establish the nature of these natural long-term variations.

Studies and measurement of the thermal properties of frozen and unfrozen soils have continued. Several papers seeking to determine universal models connecting thermal and other physical properties are in preparation.

The geothermal group welcomed two permafrost scientists from the Peoples Republic of China from June to December, 1978. The two visitors participated in the field programs in the Mackenzie Delta and then joined the group in Ottawa to assist with interpretation of field data.

Plans for 1979-80

The program of geothermal studies will continue to attempt to keep pace with the needs of increasing resources development. Through Energy Research and Development - Northern Transportation funds contract investigations of moisture migration processes and gas hydrate properties will be continued. Field investigations at the drained lake site will enhance the laboratory experiments on moisture migration and permafrost growth.

Through cooperation with Foothills Pipe Lines Ltd. several 30 m holes near the Alaska Highway will be outfitted with instruments for ground temperature studies. An intensive effort in contacting mining companies operating in the Yukon will produce deep sub-surface temperature information.

In 1979 it is planned to construct by contract and deploy the first package to record temperatures in offshore wells beneath 1 000 m of water.

The establishment of a joint Government-Industry Working Group on Permafrost and Hydrates should bear fruit in 1979.

It is hoped that still closer ties between the geothermal group and the international permafrost community will occur in 1979.

Geomagnetic Service

Responsibilities

The Division of Geomagnetism provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information printed on many other maps, including aeronautical and marine charts, concerning the angle between true north and magnetic north and its change from year to year. The division, through surveys and analyses of large-scale anomalies in the magnetic field, provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at their initial formation and during their subsequent history are analysed to learn when and how geological structures were formed. Knowledge of the evolutionary process is important in understanding how fossil fuel and mineral deposits originated and where they might be located.

The Geomagnetic Service records and analyses rapid variations of the earth's field, with periods measured in hours or seconds. Eleven magnetic observatories in Canada record these changes continuously. Three are in the auroral zone and four in the polar cap, north of the auroral zone. The rapid magnetic variations provide information on electric currents in the ionosphere and on the physical properties and dynamic behaviour of the magnetosphere. These studies have practical applications in the North, in the fields of telecommunications, transmission of electric power, and the investigation of deep crustal structure by electromagnetic induction.

Review 1978-79

Magnetic observatories operated continuously through 1978-79 at Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording magnetometers provided data in digital form at Alert, Pelly Bay, Rankin Inlet and Eskimo Point as part of the Churchill Chain of stations contributing to the International Magnetospheric Study 1976-79 (IMS). Eighteen repeater stations in the Arctic islands and on the north coast of the NWT mainland were occupied to provide information on the secular change of the earth's magnetic field. Laboratory investigations were made of the natural magnetization of oriented rock samples from the Great Bear Lake region, the Mackenzie Mountains and the Belcher Islands. A review of geophysical data over the Arctic Basin include evidence from magnetic anomalies, from magnetotelluric soundings and from paleomagnetic studies bearing on the origin and history of the Arctic Ocean.

Plans for 1979-80

The five magnetic observatories and four IMS recording stations in the NWT will operate through 1979-80. Oriented rock samples for paleomagnetic research will be collected in the Great Slave Lake and Great Bear Lake regions and on Russell Island and Prince of Wales Island. Eight unmanned magnetic recording stations will be operated simultaneously on the sea ice, in a line across the Lomonosov Ridge near the north geographic pole, in an investigation of the electrical properties of the ocean crust during LOREX 79. Magnetotelluric measurements will also be made at the floating ice stations and magnetic gradients will be recorded as the stations drift over relatively shallow ocean bottom.

Gravity Service

Responsibilities

The Gravity Service completes the regional gravity survey of the whole of Canada. In the far North this work is performed in cooperation with the Polar Continental Shelf Project. Precise observations of gravity provide basic data for the mineral and oil exploration industries, for studies of sedimentary basins and for studies of the earth's crust and upper mantle. In addition, these observations provide data for geodetic studies. The service maintains a first-order network of gravity stations to serve as a reference and as control points for all regional and detailed gravity surveys. It also maintains a data bank of all gravity data which meet national standards.

Review 1978-79

Between July and September, 1978, more than 21 000 line kilometres of gravity profiling were logged in Hudson Bay during a cruise of the CSS *Narwhal*. This work, done in cooperation with the Canadian Hydrographic Service, completes that portion of the regional reconnaissance gravity survey of Hudson Bay to be done using shipborne instrumentation. The overall line density is now generally closer than 10 km, except in areas of the littoral zone where further surveys on the ice will be needed.

From mid-January to March a second cooperative survey involving the Canadian Hydrographic Service and the Ministry of Transport produced approximately 1 200 stations at 6 km intervals on the frozen surface of Hudson Bay, north and east of the Belcher Islands. Helicopters were used to provide transportation.

In March and April a helicopter-supported survey of the eastern half of Viscount Melville Sound yielded more than 1 200 gravity stations on the ice. Average station spacing was again 6 km.

During 1978 a special Earth Physics Branch study of Arctic geophysical data was published. This new volume, "Arctic Geophysical Review" reviews the history of geophysical measurements made in Arctic regions and reconstructs the development of the Arctic Basin. The 108-page review is divided into nine subjects: bathymetry, seismicity, heat flow, magnetotellurics, geomagnetism, gravity, crustal structure, topography of the Alpha Ridge and the evolution of the Arctic Basin. The summary combines and correlates the collected geophysical information and offers an analysis of Arctic Basin structure and morphology. Included are four large 1:7 500 000 maps of the north polar regions that show bathymetry, seismicity, observed-predicted free-air gravity and residual free-air gravity north of 60°N.

Two detailed gravity profiles across the Sverdrup basin were analysed in conjunction with deep and shallow seismic refraction data obtained in 1972, 1973 and 1974. Preliminary studies show both short and long wave-length anomalies. The former are related to igneous intrusions and evaporite diapirs and the latter appear to be related to deep-seated causes such as the variation in thickness of the Sverdrup Basin, the Franklinian Geosyncline and the crust.

A gravity traverse across the coal-bearing Bonnet Plume Basin in the Yukon Territory has been analysed to determine its main structural elements. This project was undertaken jointly with the Institute of Sedimentary and Petroleum Geology, Calgary.

Plans for 1979-80

Gravity surveys on the ice in northeastern Hudson Bay, between the Ottawa Islands and the coast and in M'Clintock Channel will be extended. Gravity traverses will also be observed from an ice island platform as it drifts across the Lomonosov Ridge in the Arctic Ocean. This survey is part of a larger multidisciplinary survey, the Lomonosov Ridge Experiment, 1979. The Gravity Service will also participate in a shipborne dynamic gravimeter survey of the Labrador Sea from Cape Chidley to Cape Dyer. This survey has been planned by the Atlantic Geoscience Centre, Dartmouth, Nova Scotia.

A review of all geophysical data relating to the polar continental margin is planned for 1979. Studies of the crustal structure of the Sverdrup Basin, Lomonosov Ridge and Eastern Hudson Bay will be undertaken. Selected gravity anomalies and morphological features of the Arctic Ocean floor will be studied. Investigations of mineral relationships found at the Houghton structure, Devon Island, will be continued.

Geodynamic Service

Responsibilities

The Geodynamic Service develops a better understanding of the dynamics of the solid earth and associated natural and induced geophysical hazards and ensures the availability of information on crustal deformation, earth rotation and polar motion for the Canadian landmass.

Review 1978-79

Laboratory experiments to explain large wind-induced tilts of the pack ice on the Beaufort Sea were terminated. Results of flume experiments showed that the observed tilt for a given floe length is proportional to the wind stress. Earlier problems with boundary layer effects have now been overcome.

Plans for 1979-80

Scientific supervision and coordination of a multidisciplinary geophysical survey of parts of the Arctic Ocean, near the North Pole, (LOREX 79) will be provided by the Geodynamic Service. Plans are also under way to hold a meeting in November-December, 1979, to review the preliminary results of the survey.

Canada Centre for Mineral and Energy Technology

Review 1978-79

Wire-on-bolt atmospheric corrosivity devices exposed at five Arctic sites for one year were recovered and the corrosion rates measured. These were found to be lowest at Norman Wells, NWT. During the summer of 1978, about 50 devices were installed for one-year exposures at various sites in the Arctic.

Work on line pipe steels directed towards ensuring the integrity of pipelines in Northern Canada has continued. A program evaluating full size trial pipe is nearing completion. This program includes nondestructive inspection, determination of residual stresses following fabrication, the level of uniformity of mechanical properties, the nature and uniformity of microstructure, properties of seam welds, assessment of field weldability, fracture toughness, and corrosion properties. The work has been expanded to include electron metallography of the heat affected zone of seam welds. The evaluation and research on corrosion and welding has been reviewed and consultation with industry has been enlarged. Research into the failure potential of line pipe from mechanical damage has progressed.

Plans for 1979-80

Wire-on-bolt devices will be recovered from about 50 sites in the Arctic. The corrosion rates will be measured in the laboratory and reports released.

Resource Management and Conservation Branch

Responsibilities

The Resource Management and Conservation Branch administers and manages mineral resources in Hudson Bay and Hudson Strait, including the mineral resources of many of the islands. The branch exercises regulatory control over the exploration for and development of mineral resources of these and other offshore regions under the jurisdiction of EMR.

The disposition of oil and gas rights on these lands is governed by the Canada Oil and Gas Land Regulations, promulgated under the Public Lands Grants Act and the Territorial Lands Act. The authority for supervision and control of oil and gas activities to ensure safety of human life, protection of the environment and conservation of resources is provided by the Oil and Gas Production and Conservation Act.

The administration and disposition of minerals other than oil and gas is governed by the Canada Mining Regulations, promulgated under the same acts.

Review 1978-79

As of March 1, 1979, the branch administered 103 exploratory permits for oil and gas in Hudson Bay. Of these, 64 involved some 1.45 million hectares situated in northern Hudson Bay in the vicinity of Mansel and Southampton Islands where exploration for oil and gas has been suspended since 1971 at the request of native inhabitants.

No offshore drilling operations have been undertaken in Hudson Bay or Hudson Strait since 1974. The last marine seismic program was carried out in 1975 and most recent oil and gas exploration of any kind, an air magnetometer survey, took place in 1976.

During 1965-1976, the petroleum industry spent in excess of \$40 million for geophysical surveys and drilling in Hudson Bay and Hudson Strait. However, results have not been encouraging. No further oil and gas activities are anticipated for 1979. It is expected that most permits will be allowed to lapse when they reach the end of their 12-year life in 1980. Exploration for hard minerals on islands in Hudson Bay and Hudson Strait is also at a low ebb with no programs expected in 1979.

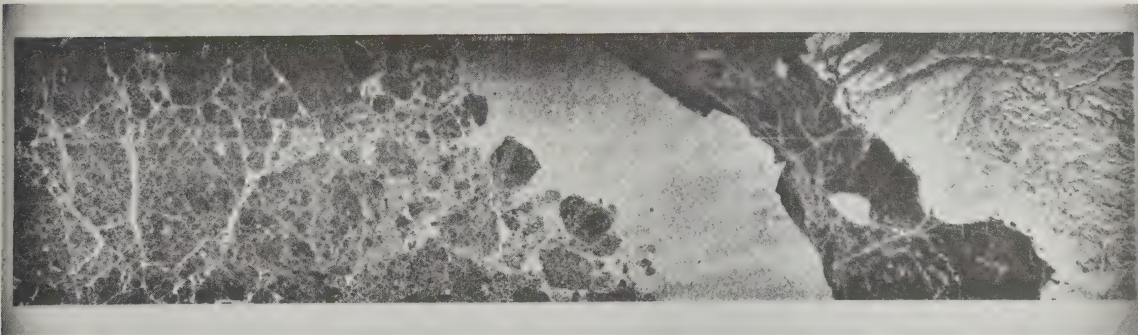
Canada Centre for Remote Sensing

Responsibilities

The Canada Centre for Remote Sensing develops and coordinates a national program of remote sensing to produce information for a better management of Canada's environment and natural resources.

Review 1978-79

CCRS has been active in several areas of interest to the North, including navigation in ice-covered waters, detection and tracking of oil spills and wildlife management.



The image above was obtained by the Synthetic Aperture Radar aboard SEASAT-A. It shows a portion of a Beaufort Sea ice pack, west of Banks Island, Canada, (right) and covers an area of about 30 by 120 km. The region is northeast of Alaska, 800 km inside the Arctic Circle. The image, contains numerous ice, water and land features. Stream channels, alluvial fans and beaches are seen on Banks Island. The dark zone adjacent to the island is an area of shore fast ice. Linear pressure ridges are seen within the shore fast zone, and west of this zone is an area of open water. At the western edge of the lead is a marginal ice zone. Further west is the main polar pack. Photo: Canada Centre for Remote Sensing.

A major program carried was the modification of the Shoe Cove Satellite Station, near St. John's, Newfoundland, for the read-out of SEASAT-A, a NASA satellite carrying a synthetic aperture radar, a radiometer and a scatterometer. SEASAT data reception was carried out in an interdepartmental effort designed to study the value of microwave sensors for ocean surveillance in any weather. This would relate to ice reconnaissance, fisheries surveillance, search and rescue, weather forecasting, vessel traffic management and oil and pollution detection. The satellite data was supplemented by extensive underflights using the CCRS long range Convair 580.

Approximately 100 scientists and resource managers carried out 40 experiments in the main application fields. The data is now being studied and a submission to Cabinet, summarizing the results of the experiments with recommendations regarding follow-on, is expected to be ready in early 1980.

Plans 1979-80

Studies by an Interdepartmental Task Force and preliminary results from the SURSAT program indicate that an all-weather earth observation satellite system would be of significant value to Canada.

The SURSAT program office expects to report to Cabinet on the results of the current experimental program in early 1980, giving its conclusions regarding the value of an all-weather satellite observation system to meet Canadian needs.

Mineral Policy Sector

Responsibilities

The Mineral Policy Sector assists in the development of federal government policies on mineral resources. Its work deals mainly with non-energy mineral resources and their contribution to the economy.

Review 1978-79

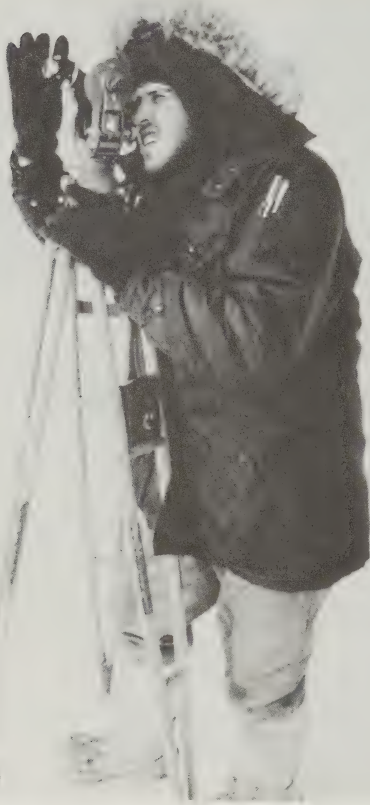
The Mineral Policy Sector participated in northern development activities in 1978-79 principally through special study groups or interdepartmental committees. These included: The Northeast Mackenzie District Transportation Study, The Yukon Railway task force on the White Pass and Yukon Railway request for government financial help, The Interdepartmental working group on Yukon Railway extensions, The Northern Mineral Advisory Committee, on mineral policy strategies for the North and Arvik Mines Limited.

Special studies or projects that involved Mineral Policy Sector, included:

- Investigations into non-ferrous smelting technology and economics pertinent to the Yukon lead-zinc ores;
- Continued monitoring of developments in transportation systems, technology, and requirements relating to mineral developments in the Territories;
- Land withdrawals and the issues related to mineral developments on caribou ranges and Inuit hunting grounds;
- The on-going program for monitoring Canada's non-ferrous metal mines' reserves and production conducted through cooperation with officers of the Department of Indian Affairs and Northern Development;
- The impact of natural gas pipeline construction upon Yukon mining industry; and regional mining exploration trends.

The National Mineral Inventory of northern mineral deposits was reviewed. Although many new cards were added, the final tally for 1978 of 2 273 was slightly below the 1977 tally of 2 293. This new total still represents 12 per cent of the descriptions in the inventory card system.

Responsibility for the annual Census of Mines and the monthly Commodity Surveys of Mines has been transferred from Statistics Canada to the Information Systems Division of the Mineral Policy Sector. Canadian mining statistics, including northern mines, will now be compiled within the Mineral Policy Sector. A monthly report "Production of Canada's Leading Minerals" will be published by EMR. The annual reports based on the Census of Mines will continue to be published by Statistics Canada, but the non-fuel issues will be compiled by the Mineral Policy Sector. The Department of Indian Affairs and Northern Development will become a joint participant in this work.



Surveying in the Arctic

Publications listing the descriptions of many Canadian mineral deposits continue to be up-dated and re-issued. A new version of "A Survey of Known Mineral Deposits in Canada That Are Not Being Mined", has now been published. This contains 933 references of which 92 are deposits in the Territories. A second publication, "Canadian Reserves of Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold", will be out in a new edition in 1979. There are 191 references in this publication, of which 32 are deposits in the Territories.

Plans for 1979-80

It is expected that advisory assistance to the study groups on transportation, power supply, and northern mineral policies will be important elements in the sector's contribution to northern developments in 1979-80. The sector will continue to be involved in the gathering of data bearing upon northern mineral development. Advice and other assistance will be provided. Cooperation with other departments in providing policy guidance in northern economic matters will remain a principal part of the sector's northern responsibilities.

Surveys and Mapping Branch

Responsibilities

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on Canada through production and distribution of maps, the National Atlas of Canada, aeronautical charts, gazetteers of place names and aerial photographs. The branch also ensures that national, provincial and territorial boundaries and Crown lands are correctly positioned, marked and maintained. Scientific and technical support is provided to other federal and provincial government departments and agencies.

The branch has six units: Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and the Geographical Services Directorate.

The branch director-general is chairman of the Interdepartmental Committee on Air Surveys and the Interdepartmental Committee on Aeronautical Charting. The branch also provides secretariats for the Canadian Council on Surveying and Mapping and the Canadian Permanent Committee on Geographical Names.

Geodetic Survey Division

Responsibilities

The Geodetic Survey expands and maintains survey networks and does special surveys for other federal agencies, industry, environmental studies, engineering and geosciences reports, national security and national mapping.

Review 1978-79

First order levelling was carried out along the Dempster Highway from Dawson, Yukon, to Arctic Red River, NWT, and the Alaska Highway was relevelled from Whitehorse, Yukon, to Tetlin Junction, Alaska. The small level net established at Inuvik in 1977-78, to check the stability of several types of bench marks in permafrost, was levelled twice during the year. Doppler satellite positioning was used to establish nine stations in Yukon Territory, 24 stations on Baffin Island and four stations on Coats, Mansel and Walrus Islands. Some 4 300 km (about 100 stations) of conventional second-order traversing in the area north of latitude 64° and west of the Mackenzie River were completed. Conventional altimetry was used to establish vertical mapping control over an area of 200 000 km² in the Yukon Territory and 60 000 km² in the area around Baker Lake, NWT. Astronomical observations were made at four locations in the Yukon to provide orientation control for new traverse surveys.

Plans for 1979-80

The doppler satellite positioning program will continue with stations established in the District of Franklin, on Victoria, Devon, Ellef Ringnes, Prince Patrick, Melville and Prince of Wales Islands in support of 1:50 000 mapping. Existing lower-order survey control will be improved and additional vertical and horizontal control provided for the 1:50 000 mapping program on Prince Patrick, Melville, Prince of Wales, Bathurst, Cornwall and Devon Islands. Vertical mapping control by altimetry will be established on Prince Patrick and Melville Islands. Astronomical observations will be made along the Yukon-Alaska Boundary, in support of the 1983 Continental Adjustment.

Legal Surveys Division

Responsibilities

The division carries out surveys for land or resources transactions connected with the administration and development of public or other lands. It ensures the competence of the property surveys, land descriptions and plans made under the Canada Lands Surveys Act and other acts and regulations. The division fulfills the federal obligations regarding definition, survey and maintenance of provincial and territorial boundaries in Canada.

Review 1978-79

Yukon Territory

Summer residential subdivisions were surveyed at Marsh Lake, Braeburn Lake, Fox Lake and Judas Creek Subdivision for the Department of Indian Affairs and Northern Development. One lot at Whitehorse was also surveyed.

One lot at Bear Creek and Haines Junction were surveyed for DIAND and approximately 200 monuments were placed, covering 21 properties in Dawson City.

A boundary resurvey was carried out for Moosehead Indian Reserve and inspection surveys were made at Crestview (Whitehorse) and at Faro.

Fourteen monuments were established in the Whitehorse, Dawson City and Ross River Coordinated Survey Areas, with additional ties being made in the Whitehorse and Dawson City nets.

Northwest Territories

Seventy-eight summer residential lots were surveyed at nine sites in the Yellowknife area and at Sandy Lake for the Department of Indian Affairs and Northern Development. One lot at each of Lone Mountain and Nahanni Butte and the communities of Tuktoyaktuk and Frobisher Bay were also surveyed.

Six lots were surveyed in Pelly Bay for DIAND, the Department of National Health and Welfare and the Government of the Northwest Territories.

Preliminary surveys were done at the 10 sites for summer residential lots. Investigation of the requirements for surveys was carried out at Resolute Bay and Yellowknife. Inspection surveys were executed at Inuvik, Yellowknife and Madeline Lake.

The Yellowknife and Hay River Coordinated Survey Areas were inspected and minor maintenance performed. Five monuments were replaced in the Inuvik Coordinated Survey Area.

Plans for 1979-80

Yukon Territory

Approximately 130 summer residential lots will be surveyed in various areas including Tagish Lake, Little Salmon Lake and Quiet Lake. Twenty-two lots will be surveyed in three areas near Six Mile River. Individual lots will be surveyed at Beaver Creek, Ross River and Old Crow. This work is for the Department of Indian and Northern Development.

The Department of Energy, Mines and Resources will have surveys inspected and six Coordinate Control Monuments placed in the Whitehorse Coordinated Survey Area.

Northwest Territories

The Department of Indian Affairs and Northern Development will have summer residential lots surveyed at Sandy Lake (10 lots), Prelude Lake South (5 lots) and Flat Lake (10 lots), settlement lots at Wrigley, Inuvik and Tuktoyaktuk, and one isolated lot at Kittigazuit, near Tuktoyaktuk and Mt. Gaudet.

The Department of Energy, Mines and Resources has requested survey inspections at Sandy Lake and Yellowknife area. Approximately 15 surveys will be monitored and five Coordinate Control Monuments will be replaced or renewed in the Yellowknife Coordinated Survey Area.

Long-term Plans

Surveys for the Committee for Original People Entitlement (COPE) land claims settlement will be carried out during the next few years. Subdivision surveys are proposed in the settlements in the North to promote and facilitate development. Similarly, surveys of lots, camp sites and other parcels will be made along highways as development is undertaken by the Territorial governments.

Laying out of lots for airstrips and sites of navigational aids will be carried out in conjunction with Transport Canada. Coordinated control survey will continue to be maintained in the major settlements in the North.

Topographical Survey Division

Responsibilities

The division produces and maintains topographic maps of Canada for the needs of resource development, regional and urban planning and development, environmental management, engineering construction, national defence, and recreation, and provides technical and administrative support to the Inter-departmental Committee on Air Survey.

Review 1978-79

In 1978, a total of 19 882 km of aerial photography was flown in the North for new 1:50 000 mapping. Indexes showing present status of aerial photography may be obtained from the National Air Photo Library. Topographic map indexes are available from the Canada Map Office.

In the North, 305 new 1:50 000 maps were completed and 18 maps at the 1:250 000 scale were over-printed with revisions. In northern Canada some maps were revised by the addition of data located on LANDSAT (land satellite) imagery.

The division continued to carry out part of its new mapping program to the data base stage only. In the aerial survey data base concept, aerial photography, field control computations and photogrammetric block adjustments are completed for all map sheets in the program, but only those needed immediately are carried on to map compilation and publication. Data for the remainder is stored in digital and hard copy form until specifically required. This reduces the response time. The establishment of the aerial survey data base includes the identification on aerial photography of a network of points (spaced at about 6 km intervals) for which the precise latitude, longitude and height above sea level are determined photogrammetrically. This network will cover all areas of the North and though it will be used principally for mapping, it may have secondary boundaries. The completion of this network will take about three more years.

Planning, monitoring and inspection of surveying and mapping contracts with the survey industry on behalf of various federal departments and agencies were carried out.

In 1978, the Gestalt Photo Mapper GPM-II/3 system for the production of Digital Terrain Models (DTM) and orthophotos went into a production mode. Electronic data processing of the DTM's will allow the production of digital contour overlays for topographic mapping in the National Topographic Series system.

The production of data for 1:50 000 scale maps on the GPM-II/3 system in an area covering Amund Ringnes Island in the High Arctic has been completed. The production of DTM's for Cornwallis Island is now under way. This highly-automated photogrammetric system will produce a dense network of spot heights stored in digital form as well as reduce map production time.

Plans for 1979-80

It is anticipated that 300 new 1:50 000 map sheets of areas in northern Canada will be produced by Topographical Survey. Eleven 1:250 000 scale map sheets will be revised in 1979-80 and 34 562 km of photography will be flown for 1:50 000 mapping in the Northwest Territories and Yukon Territory.

The long-term plans of the Topographical Survey Division are: to increase substantially the present map coverage of Canada at the 1:50 000 scale and to revise, where necessary, all published topographical maps.

Reproduction and Distribution Division

Responsibilities

The division reproduces and distributes maps and aeronautical charts. It is also the custodian of all aerial photography taken for the federal government. This photography is reproduced and distributed through the division.

Review 1978-79

The Map Reproduction Centre provided the photo-mechanical, photo typesetting and bindery services as required for the National Topographic Series (NTS) maps, aeronautical charts and special purpose maps of the Yukon and Northwest Territories. Fifty 1:50 000 monochrome scale maps of the North were printed.

Plating and printing services were provided to the Lands Directorate, Environment Canada, to print 28 maps in the Canada Land Inventory and Land Use Series.

The Canada Map Office continued to support a number of authorized map and chart dealers in Northern Canada. Topographical map outlets are being maintained in Whitehorse, Dawson City, Mayo, Watson Lake, Yellowknife, Frobisher Bay, Hay River, Inuvik and Repulse Bay. Aeronautical chart outlets have been established in Whitehorse, Watson Lake, Yellowknife, Cambridge Bay, Fort Simpson, Fort Smith, Hay River, Inuvik and Norman Wells.

Plans for 1979-80

The division will continue to provide reproduction, distribution and cartographic support services in the coming year as requested.

International Boundary Commission

Responsibilities

The Commission maintains an effective boundary between Canada and the United States and determines position of the boundary should questions arise between the two governments.

Review 1978-79

There were no determinations necessary in the North in 1978-79.

Geographical Services Directorate

Responsibilities

The directorate produces small-scale maps, aeronautical charts and flight information publications, designs and produces the National Atlas of Canada, provides toponymic (geographical names) and cartographic support services.

Review 1978-79

Aeronautical charting activity in the Canadian North during 1978-79 included the production of 12 revised aeronautical chart base maps at 1:500 000, 27 air information overprints and aeronautical information overprints on four 1:1 000 000 charts. High and low altitude, enroute series charts, continued, as did Instrument Flight Rule (IFR) Supplements, Northern Supplements and Water Aerodrome Supplement publication. Canada Air Pilot, Designated Air Space Handbook and Flight Planning and Procedures documents were produced.

Work continued on the 5th Edition of the National Atlas of Canada. A map of census division and sub-divisions and a Canada energy map were produced, each with portions relevant to the North.

The Cartographic Support Unit produced 23 electoral district maps of the Northwest Territories and 17 electoral district maps of the Yukon. In addition, a Medical Facilities Map and two LANDSAT index maps were produced with portions covering the North. Work neared completion on a Northern Hemisphere map as well as two maps for the International Map of the World Series (IMW).

Plans for 1979-80

Directorate plans for mapping activities in the North include the production of seven new IMW series maps to complete the 1:1 000 000 scale coverage of the Northwest Territories. A small scale map of the Northern Hemisphere will be completed as well as 48 maps of the Canada-Gazetteer Atlas. Aeronautical charting products will include five revised aeronautical chart base maps and 20 air information overprints. There will be continued production of Enroute Charts, Enroute Supplements, Canada Air Pilot and Northern Supplements. A Visual Flight Rule (VFR) Aeronautical Strip Chart, scale 1:500 000, covering the Alaska Highway between Fort Nelson and Northway, Alaska, will also be produced.

Polar Continental Shelf Project (PCSP)

Responsibilities

Polar Continental Shelf Project does a long-term study of the continental shelf lying north of the mainland of Canada and north and west of the Canadian Arctic Archipelago. Included is the sea floor, the earth's crust, the mantle beneath and the waters above; together with the islands of the archipelago, the straits and sounds between the islands and, where relevant, the adjacent mainland.

The study covers those fields of survey and research for which Energy, Mines and Resources and the Environment do in other parts of Canada. PCSP also supports research in fields within the mandate of other government departments.

PCSP coordinates the various agencies whose specialties can be brought to bear on different aspects of major Arctic problems. It provides continuity of planning and operation for short-term studies which focus on individual problems. Examples are the Beaufort Sea Program and the Eastern Arctic Island Pipeline Program. The field resources of the branch are made available to approved university and other non-government research groups.

Review 1978-79

Field work was carried out from mid-February to mid-October. It was coordinated from Tuktoyaktuk in the Mackenzie Delta and from Resolute on Cornwallis Island.

In 1978, the eastern Arctic maintained a high level of scientific activity. Much of this was directly related to acquiring baseline data to evaluate proposals for LNG tanker route and/or an Eastern Arctic Pipeline. All disciplines of the natural sciences were involved. The major hydrographic effort of the spring season was in Viscount Melville Sound where 9067 spot soundings were taken and 1300 gravity stations occupied. The continuous-profiling through-the-ice device, developed in 1976, was modified and utilized again. Once again, the ramifications of the impact of northern development on wild animals was studied. The geological studies of northern and southern Ellesmere Island completed and reconnaissance mapping. A major archeological discovery of Viking artifacts was made in the Alexandra Fiord region of eastern Ellesmere Island. Several archeological parties were supported in their efforts to study the ancient and recent history of the Arctic. In total, 143 scientific parties were supported in 1978 by PCSP.

The following agencies received assistance from the 1978 program of the Polar Continental Shelf Project: Arctic Institute of North America, Defence Research Establishment Pacific, Department of Indian Affairs and Northern Development, Fisheries and Environment Canada, Government of the Northwest Territories, National Museums of Canada, Naval Arctic Research Laboratory, New Bedford Whaling Museum, Northern Alberta Institute of Technology, Swiss Federal Institute of Technology, Universities of Alberta, Arkansas, British Columbia, Calgary, Guelph, Heidelberg, McGill, McMaster, Montana, Ottawa, Saskatchewan, Toronto, Tubingen, West Germany, Victoria, Washington, Western Ontario, Wisconsin.

The following is a summary of work to which Polar Continental Shelf Project contributed support:

Archeology: Nunguvik, Borden Peninsula

Investigator: Guy Mary-Rousselière, Pond Inlet

Excavation of this Dorset site continued. Two new structures were found in the back of the house complex. A total of 1922 artifacts were found, including an articulated wooden doll – the first complete Dorset doll discovered.

Archeology Aston Bay, Somerset Island

Investigator: E. Bielawski, University of Calgary

The oldest occupation at this site consists of early Arctic small tool tradition. Two discreet occupations may in fact be represented. One hundred and seventy nine complete artifacts and abundant debris were collected.

Archeology: Creswell Bay, Somerset Island

Investigator: Allen P. McCartney, University of Arkansas

Field work was conducted at Thule whale bone sites to collect measurements of bowhead whale bones in order to investigate species, size and variations of bones used in house construction. The highest minimum number of bowhead whales represented at the sites studied was 545. An estimated 1000 animals may be represented. An almost even number of left and right mandibles and scapulae were located, suggesting full use of skeletons as building materials for whale bone houses.

Archeology: Thomsen River, Banks Island

Investigator: Clifford G. Hickey, University of Alberta

Research focussed on evidence of the 19th century occupation of Banks Island by groups of Victoria Island Copper Eskimos drawn to that island by the presence of the abandoned Franklin Search Expedition vessel H.M.S. Investigator. Comparisons can be made to understand overall Copper Eskimo economic strategies and the impact the presence of the Investigator caused. Eighty-four new sites were discovered.

Archeology: Dealy Island and Herschel Island

Investigator: Brian Walker-Yorga, University of Toronto

The problems of site looting and continued deterioration of the storehouse and contents at Dealy Island made it imperative that a major stabilization effort be undertaken. The building and its contents were listed and an insulated floor installed.

A second visit was made to Pauline Cover, Herschel Island, to obtain information about the once indigenous Mackenzie Eskimo population. Decimation of the site leaves little hope of ever defining the past Mackenzie Eskimo culture.

Archeology: Alexandria Fiord area, Ellesmere Island

Investigator: Peter Schledermann, Arctic Institute of North America

Excavations were carried out in two primary areas, Knud Peninsula and Skraeling Island. A number of lithic artifacts were obtained from an Arctic small tool tradition site on Skraeling Island. The Dorset culture "longhouse" located in 1977 was tested. Of further importance was the observation, excavation and testing of many Thule culture winter houses belonging to the problematic Ruin Island phase. Presumed Norse artifacts were found in situ in several of these dwellings. Preservation of the material from the Thule culture houses was very good.

Archeology: Beachey Island and Fort Conger, Ellesmere Island

Investigator: C. Parmeter, Parks Canada, DIAND.

Test excavations were completed at Northumberland House, Beechey Island, site of the Franklin search expedition depot built in 1854. The area between the depot and an L-shaped stone wall was excavated to determine distribution and content of now-destroyed barrels. The Fort Conger site was occupied by Nares (1875-76), by Greely (1881-83), by Peary (1901) and by Hansen (1920). Fragments of meteorological instruments were found. Also, preliminary surveys were carried out on northern Ellesmere Island.

Archeology: Karluk Island, Crozier Strait**Investigator:** J.W. Helmer, University of Calgary

Early Dorset culture has been studied at this site. Evidence of human occupation has been found on virtually all the major terrace systems between two and 23 above sea level embracing almost 4 000 years of prehistory. More than 800 artifacts were recovered.

Biology: Ornithology, seabirds, Lancaster Sound**Investigator:** D.N. Nettleship, Canadian Wildlife Service, EC

A data base is required for resource managers to make informed estimates and predictions of the impact of industrial expansion and resource development activities on populations of sea birds in eastern Canada. Arctic cod appears to be central to the feeding ecology of high Arctic seabirds. The summer of 1978 was particularly important towards documentation of bird response to severe climatic conditions as the ice of Lancaster Sound did not break up and the entire age group was lost.

Biology: Ornithology, Truelove Lowland, Devon Island**Investigator:** D. Pattie, Northern Alberta Institute of Technology

A bird census was taken to determine whether some species which declined in population during a period of concentrated activity in 1970-1973 might have recovered. An annual census was conducted from 1970-1973. In general, there is no drastic change in figures found in earlier years.

Biology: Zoology, polar bears, lower central Arctic**Investigator:** R.E. Schweinsburg, Government of the Northwest Territories

The range of polar bears in the lower central Arctic was found to be close to the area enclosed by Zone E of the Interprovincial Polar Bear Technical Committee. The population was further divided into five relatively discrete sub-groups. A high degree of seasonal fidelity was observed. The areas of known polar bear denning within Zone E were expanded. It was determined that males were selectively taken on the Inuit harvest.

Biology: Zoology, polar bear, Queen Elizabeth Islands**Investigator:** I. Stirling, Canadian Wildlife Service, EC

In 1974 and 1975, the population of polar bears in the western Arctic declined by 35 per cent and 50 per cent. Results of capture and tagging in 1978 indicate that the population is increasing again. An increase in numbers of seals was also recorded in 1978.

Observations of the behaviour of free-ranging polar bears continued at Radstock Bay.

Biology: Zoology, Vertebrate Ethology and Animal Community Study, Bathurst Island and Penny Strait**Investigator:** S.D. MacDonald, National Museum of Natural Sciences

The 11th year of operation of the National Museums of Canada High Arctic Research Station on Bathurst Island saw the continuation of two major projects on the behavioural adaptations of Arctic animals, both started in 1968; the behaviour of muskoxen, and the breeding biology and census of the birds of Polar Bear Pass. Other continuing projects were: behaviour and breeding ecology of Ivory and Ross' Gulls; reproductive biology of muskoxen; and behaviour of Arctic wolves and Peary caribou. New projects in 1978 were: the investigation of nest-site selection in Black-bellied Plovers, and the feeding ecology of muskoxen.

Biology: Zoology, Narwhal, Eclipse Sound**Investigator:** H. Silverman, McGill University

Data were collected from 38 narwhal consisting of scar counts, stomach contents, tusk measurements, jaw bones and teeth for ageing and various glands. Also samples of muscle, muktuk and kidney were taken for heavy metal analysis. Behavioural observations were recorded from the ice edge. Sitings of narwhal in Eclipse Sound were relatively infrequent.

Biology: Zoology, Arctic hare, Fosheim Peninsula, Ellesmere Island**Investigator:** M.C. Gauthier, McGill University

Numbers of Arctic hare in the Eureka area were low again in 1978. Further observations were made of the food and habitat preferences of the hare. Captive specimens of hare were selectively fed samples of 40 different plant species and then released.

Biology: Zoology, Peary Caribou, Viscount Melville Sound and Barrow Strait**Investigators:** F.L. Miller and A. Gunn, Canadian Wildlife Service, EC

Inter-island movements of Peary Caribou are extensive. A total of 422 trails were observed. A minimum of 1033 animals had travelled those trails and 53 caribou were seen traversing the sea ice. Observations suggest that springtime inter-island movements of Peary caribou across Peel Sound and Franklin Strait are essentially east to west movements of animals that have spent at least part of their winters on Somerset Island or the Boothia Peninsula and then moved to Prince of Wales Island for summering.

Biology: Zoology, whales, Mackenzie Delta**Investigator:** D.E. Sergeant, Arctic Biological Station, EC

Coastal surveys by helicopter were made between July 24-29, 1978, to count white and bowhead whales. Distribution of white whales was as expected. There were no bowhead whales along this coastline and no fresh strandings since 1975.

Biology: Zoology, Ringed seals, Holman, Victoria Islands and Sverdrup Basin**Investigator:** T.G. Smith, Arctic Biological Station, EC

Approximately 400 specimens of ringed seals were collected and bought from the Inuit hunters. An aerial survey of the area from Norwegian Bay north to Meighen Island was undertaken. Also, as part of the EAMES project, baseline studies of seals, walrus and beluga whales in the coastal areas between Cumberland Sound and Frobisher Bay were begun. Behavioural studies were conducted to determine sizes of territories occupied by breeding seals, studies of population age structure from seals collected by the Inuit hunter and aerial surveys to locate walrus.

Biology: Zoology, muskoxen, Grise Fiord, Ellesmere Island
Investigator: J. Rowell, University of Ottawa

A comparative study of the reproductive physiology and anatomy of wild muskoxen was undertaken through examination of reproductive tracts from beasts shot by native hunters. Blood samples were taken for hormonal analysis. Fetal fluids and tissues were taken from two pregnant cows. Counts were kept of individual and herd animals and where possible, sex ratios within the herd. During one hunt, a helicopter was used, circling downward from 305 m and landing about 1 km from the herd.

Botany: Crude oil effect on soil fungi, Cameron Island and Devon Island

Investigators: P. Widden and M. Hamel, Concordia University
 The study is designed to determine whether Arctic soil fungi may be potentially important in crude-oil degradation. The effects of crude-oil spillage take time to appear.

Botany: Heavy metals content, various locations

Investigator: A. Gunn, Canadian Wildlife Service, EC
 As a pilot project to examine the distribution of naturally occurring heavy metals in plant and animal tissues, samples of plant material and herbivorous mammal tissue were collected. Tissue from several species of plants were obtained from areas of Precambrian rock on Somerset Island where heavy metals occur. Lemming liver and muscle tissue from eight lemmings were made available. Samples of caribou liver were obtained from five caribou bulls. The samples are currently being analysed for heavy metals.

Botany: pingo environment and ecology, Tuktoyaktuk

Investigators: S. Luck and R. Hastings, University of Alberta
 The study was to discover the nature and extent of the physical controls on the development of pingo vegetation and to apply this knowledge to the understanding of the use of pingos as wildlife habitats. There is a remarkable microclimatic variation over individual pingos. Vegetation maps of five pingos have been constructed and species listed. Small mammals were found not only to prefer pingo habitats to the surrounding tundra but also to prefer certain plant communities on the pingos.

Botany: plant and soil material, various locations

Investigator: J. Svoboda, Erindale College
 Plant and soil material were collected for dating and determination of radioactive fallout deposited from past and recent nuclear weapon testing. Preliminary results indicate that the Arctic is still significantly contaminated by the radiofallout (mainly Cesium 137) and that the contaminants persist in Arctic long-lived organisms such as lichens and cushion plants.

Climatology: Data Collection, eastern Arctic

Investigator: Bea Alt, Polar Continental Shelf Project
 Weather reports were received twice daily from 56 field stations. A mini-screen to house a maximum and minimum thermometer was designed and constructed for several stations. The weather observations were relayed to Arctic Weather Central for operational use. A catalogue of weather observations collected since 1973 has been assembled.

Geology: Bedrock heave, central Arctic
Investigator: L.D. Dyke, Geological Survey of Canada

The objective was to examine the disruption of bedrock masses in the permafrost environment both as a process contributing to landform evolution and as a factor to be considered in engineering endeavours. Twenty-five sites were established to consider geologic, hydrologic and permafrost conditions. Observations of heave suggest that freezing of standing water in otherwise vacant bedrock cracks may result in relatively large and rapid vertical movements where the layer is deep.

Geology: coastal studies, Sverdrup Islands

Investigator: R.B. Taylor, Geological Survey of Canada
 Coastal studies in support of marine terminal planning were begun. Four to five beach profiles were established and surveyed at representative coastal segments. The coastal morphology and sediments of the Sverdrup Islands are closely related to the underlying geology. Although the shores are superficially modified by small waves, there are few examples of well-developed wave-built features, nor evidence of longshore transport of sediment.

Geology: Geomorphology, Mackenzie Delta

Investigator: J.R. Mackay, University of British Columbia
 Studies were undertaken on the effect of snow depth on ground temperatures and measurements were made on dilation cracks in pingos and on a drained lake flat at a site 15 km east of Tuktoyaktuk. Open dilation cracks on one pingo extended to a depth of 7 m and were as much as 20 cm wide at the top. Observations were made on earth hummocks, ice-wedge growth, and snow effects on ground temperatures at Garry Island. Precise levelling of bench marks on recently-drained lake bottoms demonstrates that lake bottom heave can occur from the freezing of unfrozen pore water in permafrost as the permafrost temperature decreases. Studies were carried out at "Illisarvik", about 75 km west of Tuktoyaktuk, where a lake was drained to study permafrost conditions beneath the lake.

Geology: Geomorphology, Neil Peninsula, Ellesmere Island

Investigators: D. Barsch and L. King, Heidelberg University
 Studies were directed at slope processes and glacial and periglacial chronology and morphology. Processes that predominate the actual morphology are intense weathering and high mass movement rates. Glacier fluctuations during the last 8 000 years may be more numerous than previously advocated.

Geology: Geomorphology, Banks Island

Investigator: H.M. French, University of Ottawa
 The hydrological and geomorphological processes associated with slopewash are being studied in an area along the Thomsen River. It is thought that the presence of permafrost has an effect. In the Sachs Harbour area, the permafrost stratigraphy and surficial geology were investigated. The low coastal cliffs southeast of Sachs Harbour reveal large ice wedges and other permanently frozen sediments. There appears to have been several periods of ice wedge growth and permafrost degradation.

Geology: Holocene, Cape Herschel, Ellesmere Island**Investigator:** W. Blake, Jr., Geological Survey of Canada

Cores from ponds containing organic-rich sediments might contain diatoms which would reveal the point at which the transition from marine to freshwater conditions had occurred. By radiocarbon dating, it might be possible to document the passage of the shoreline and to construct an emergence curve. Five ponds were cored on Cape Herschel.

Geology: Proterozoic, Victoria, Somerset and Prince of Wales, Islands**Investigator:** G.M. Young, University of Western Ontario

Oriented samples of Proterozoic sedimentary and volcanic units were taken for paleomagnetic study. Because the samples from Prince of Wales Island and from Somerset Island are on opposite sides of the Boothia Arch, they may allow carrying out a fold test on the older Proterozoic rocks. Red sandstones of the lower clastic unit of the Reynolds Point Formation were sampled on Victoria Island. Also, samples from a volcanic unit in the uppermost formation of the Shaler Group may provide a definitive age for the top of the Shaler Group.

Geology: Quaternary, Bylot Island**Investigator:** R.A. Klassen, Geological Survey of Canada

Bylot Island lies near, and possibly within, the maximum outer margin of the Wisconsin Ice Sheet. Carbonate erratics have been found inland at four locations indicating by their distribution pattern that ice has impinged on Bylot Island out of Pond Inlet at least once. Bylot Island has been affected at least once by glaciers originating from sources located off the island. Ice movement has been onto the island from both the north and south.

Geology: Quaternary ecology, Mackenzie Delta**Investigator:** J.C. Ritchie, University of Toronto

Unconsolidated lake sediments were successfully recovered from three lake sites using piston coring equipment. The pollen stratigraphy has been analysed; it suggests that a complete stratigraphic record of the Holocene and Late-Pleistocene has been recovered.

Geology: Quaternary stratigraphy, northern Ellesmere Island**Investigators:** J. England, University of Alberta and**R.S. Bradley, University of Massachusetts**

This season's field work was designed to evaluate and refine observations of 1975-76 wherein the presence of former ice shelves were believed to have developed a long western Kennedy Channel during the maximum Ellesmere Island glaciation. Observations were made on the elevations and relative ages of glacial and glaciomarine deposits. Three valleys along western Kennedy Channel reveal that the outermost (and uppermost) moraines deposited by Ellesmere Island ice were associated with former relative sea levels above the maximum Holocene shorelines. This work should confirm the age and extent of the outermost Ellesmere Island ice advance.

Geology: Stratigraphy, Richardson Mountains, Yukon**Investigator:** B.T. Roberson, University of Saskatchewan

Two sections of an Albian phosphatic ironstone in the northern Richardson Mountains were measured and sampled. Specimens of rare phosphate minerals were collected. Two new, and as yet unidentified, minerals have been identified.

Geology: Surficial geology, central Ellesmere and Ringnes Islands**Investigator:** D.A. Hodgson, Geological Survey of Canada

Investigation of Quaternary history, and in particular the position of a prominent Holocene ice margin, continued on Ellesmere and Cornwallis Islands. The result is critical to studies of sea level change, recent crustal movement and climatic change in the high Arctic.

Geophysics: Geomagnetism, Northwest Territories**Investigator:** L.R. Newitt, Earth Physics Branch

Eighteen magnetic repeat stations were visited to increase knowledge of the secular variation of the magnetic pole in the Canadian-Arctic. This variation in the magnetic declination has increased since the early 1970's. While the secular variation in the horizontal intensity is still positive over the whole Arctic, its magnitude has decreased sharply in the western Arctic. As for the vertical intensity, while still positive over most of the Arctic, its magnitude has decreased rapidly since the mid-1970's. In the southern Arctic, and possibly now in the western Arctic, the secular variation has actually become negative.

Geophysics: Geothermal, Sverdrup Basin and Mackenzie Delta**Investigator:** A. Judge, Earth Physics Branch

The program of temperature measurements in abandoned northern wells continued, concentrating on the Delta holes to complete the major part of the program in that area. Also, after a preliminary drilling investigation to outline the distribution of permafrost beneath Illisarvik, the lake was drained.

Geophysics: Gravity, Viscount Melville Sound**Investigator:** D. Halliday, Earth Physics Branch

The gravity survey was conducted in conjunction with the hydrographic survey. Station spacing was 6 km for 1 300 gravity stations. As in western Melville Sound, the Bouguer anomaly field is characterized by an east-west high centered on latitude 74°N in the west and on 74° 20'N on the east end.

Geophysics: Magnetotellurics, Viscount Melville Sound**Investigator:** P.A. Camfield, Earth Physics Branch

A three-component fluxgate magnetometer sensed variations in the geomagnetic field while horizontal electric fields in the sea were measured between electrodes separated by 270 m. The electric field at this location (30 km west of Resolute) is strongly polarized in the east-west direction. Vertical magnetic variations recorded at this site in the period range 5 to 30 minutes do not have the strong suppression found in the Mould Bay region.

Geophysics: Permafrost, Mackenzie Delta**Investigator:** J.A. Hunter, Geological Survey of Canada

Twelve holes were drilled in the sea floor of the Beaufort Sea using hydraulic jet equipment at the edge of the shorefast ice. Data were gathered on the variation of sediment type, ice content and permafrost temperatures. The talik zone beneath Illisarvik was defined by seismic methods. Shallow refraction surveying was done along the west shore of Tuktoyaktuk Hamlet to map the top of ice bonded permafrost as part of the DPW shoreline erosion study. Sidescan sonar, high resolution seismic reflection and refraction techniques, bottom temperatures and core-sampling methods were utilized to study shallow geological structure and permafrost conditions in the offshore area North of 70° in the Beaufort Sea from CCGS Nahidik.

Geophysics: Resistivity, Mackenzie Delta

Investigator: W.J. Scott, Geological Survey of Canada
Resistivity soundings were carried out through the lake ice at Illisarvik and Immarnuk Lakes. Inductive resistivity measurements were made at two other locations. Development work on a water-borne resistivity unit continued.

Geophysics: Sonic logging, Mer de Glace Agassiz, Ellesmere Island

Investigator: C.R. Bentley, University of Wisconsin-Madison
Sonic velocity was measured in a 350 m drill hole through the ice cap. Due to densification, the velocity increases downward at a decreasing rate down to a depth of about 150 m. From 150 to 200 m, the velocity decreases very slowly in accordance with the expected effect of increasing temperature. From 200 to 260 m, the velocity increases gradually, an effect which might be interpreted as due to a gradually increasing concentration of ice crystal C-axes around the vertical direction. From 260 to 300 m, the increase in velocity is much steeper suggesting a rapidly developing fabric. To the bottom of the Holocene ice zone at about 330 m, the velocity is relatively constant. Passing into the Wisconsin ice below, there is a dramatic and abrupt increase in velocity.

Glacier Physics: Mer de Glace Agassiz, Ellesmere Island

Investigator: R.M. Koerner, PCSP

The mass balance of the ice caps of Meighen, Agassiz and Devon Islands was measured. The 1977 borehole on Agassiz was resurveyed to a depth of 330 m for borehole diameter and temperature. Several strain nets around the borehole were remeasured. In addition, a new technique was used down the borehole to detect volcanic layers by their high electrolytic conductivity.

Hydrography: Continuous profiling, Viscount Melville Sound

Investigator: M. Crutchlow, Canadian Hydrographic Service, EC
A spike coupled transducer with a tracked vehicle mounted actuator assembly has been developed for through-ice sounding. A Bombi tracked vehicle and test stand were used to determine the operational limits and performance characteristics of the transducer and transceiver. Later, a helicopter was used to test the actuator assembly and determine the production potential of the entire system. It appears that the actuator and spike coupled transducer can be used in a production mode.

Hydrography: Viscount Melville Sound

Investigator: E.F. Thompson, Canadian Hydrographic Service, EC

The survey was two-fold in purpose, to gather bathymetric data for the improvement of navigational charts and to gather tidal information in Viscount Melville Sound. A total of 9 067 spot soundings were taken. Decca 6 f and Mini Ranger positioning systems provided continuous location for the aircraft.

Hydrography: Amundsen Gulf

Investigators: A.D. O'Connor, Canadian Hydrographic Service, EC, and S. Blasco, Geological Survey of Canada

The Pandora II cruise produced 18 000 km of sounding and magnetic data, 1 000 km of seismic profile data and an assortment of bottom and water column samples. These data will be used to produce nautical charts and to assist in resolving the Quaternary marine history. Water level gauges installed in 1977 were recovered and the data will permit better tidal predictions at Tuktoyaktuk, Cape Parry and Cambridge Bay.

Oceanography: Current measurements, Barrow Strait

Investigators: P. Stalinski and P. Peltola, McGill University
Current velocities and direction to the bottom were recorded on magnetic tape. A profiling current meter was used at three locations over a period of three weeks. Highest velocities were observed at a location 12 km north of Garrett Island. A location midway between Russell and Young Islands was visited on two occasions and the difference in current velocity was noticeable.

Oceanography: Current measurements, Crozier Strait

Investigator: E.L. Lewis, Frozen Sea Research Group, EC
Current meters were recovered from Crozier Strait, data from which show that currents are mainly tidal but suggesting that the residual southerly transport maximized around midwinter there being almost an order of magnitude difference between average summer and winter current speeds recorded at two current meters near the bottom.

Oceanography: Viscount Melville Sound

Investigator: G.S. Peck, Ocean and Aquatic Sciences, EC
Data on the transport and surface current distribution in the western portion of the Barrow Sill for the winter and spring periods are required for the design of icebreakers and for a real-time ice prediction model. Ten current meters were moored. The data will be used to compute relative vertical geostrophic currents and to investigate the exchange properties of the Arctic and Atlantic surface waters.

Photography: Mackenzie River and Sverdrup Basin

Investigators: D. Sherstone and D. Terroux, Inland Waters Directorate, EC

Air photography was undertaken over selected areas of the Mackenzie and Liard River basins following the breakup of river ice from Fort Nelson to Inuvik. Additional photography was obtained in the Arctic Islands and Kluane National Park, Yukon Territory.

Sea Ice: Aerial Surveys, Arctic Archipelago

Investigator: D.G. Lindsay, contractor to PCSP

Observations of the sea ice conditions in the channels of the Canadian Arctic Archipelago between Alert and Tuktoyaktuk and from Baffin Bay to the Arctic Ocean and the Beaufort Sea were completed. This is the 18th consecutive year of the program. Good and complete data were obtained.

Sea Ice: Strain measurements, Pauline Cove, Herschel Island
Investigator: P.F. Cooper, PCSP

A small equilateral triangle was set out on the sea ice south of Pauline Cove, Herschel Island. This was included in the apex of a larger triangle. Between January and April, 1978, measurements of both the small and large triangles exhibited, overall, the pattern of continued contraction that was familiar in previous work. However, between April and May, conditions changed. Although two sides of both triangles continued to shrink, the third side grew considerably, both overall and in each of its segments. It was deduced that the overall area of the small triangle increased by approximately one part in 10^4 while that of the larger triangle remained essentially unchanged.

PCSP support was also provided for:

- a search for whalers' graves, art and artifacts at Baillie Island and Langton and Balaena Bays;
- documentation of numbers, species composition and general use of Barrow Strait by marine birds;
- herding and banding of 3 000 flightless geese in the Anderson River-Liverpool Bay area;
- a study of coastal distribution of fish along TUK Peninsula;
- a study of insect frost tolerance in the Arctic and a considerable extension of known Canadian arctic insects;
- an investigation of polar bear sea ice habitat;
- a pilot study to ascertain digestibility of some moss species ingested by caribou in winter;
- a determination of summer cold hardiness of certain Arctic plants;
- mapping and sedimentological studies of the Cretaceous-Tertiary section on Bylot Island;
- a definition of deglacial chronology in northern Boothia Peninsula;
- verification of certain structural and stratigraphic hypotheses in northern Yukon;
- extensive faunal collections from the Silurian Read Bay Formation on eastern Cornwallis Island;
- an investigation of the stratigraphy and paleontology of the lower 200 m of the Blue Fiord Formation, southern Ellesmere Island;
- geological observations of the Wellington High, Washburn Lake area, Victoria Island;
- a study of Precambrian crystalline basement in eastern Devon Island;
- a survey of coastal environments of eastern Lancaster Sound with respect to geomorphology, sedimentology and biological habitats;
- a geomagnetic survey in eastern Amundsen Gulf;
- study of auffs and underground ice along the proposed Dempster Highway lateral pipeline;
- atmospheric corrosion of metals in the Arctic environment;
- a comparative study of an Arctic isopod in fresh and salt water habitats;
- Wilderness Park area definition;
- a study of the disposal problem of waste oilwell drilling fluids;
- a survey of water runoff conditions in a small watershed near Resolute;
- studies of hydrologic regimes to highway construction and related activities in the Mackenzie Delta;

- studies of hydrologic behaviour of two small basins near Resolute;
- tracking icebergs in eastern Lancaster Sound by means of radar;
- a re-vegetation program of mine wastes;
- microclimate research of the polar desert surface;
- surveillance of artificial islands in the Beaufort Sea;
- geological mapping of Houghton Dome on Devon Island;
- a study of barren ground grizzly bears.

Plans for 1979-80

During 1979, LOREX at the North Pole will be a major Canadian effort in a geological, geophysical and oceanographic investigation of the submerged mountain range that spans the Arctic Ocean from Ellesmere Island to Siberia. It is an EMR project supported by scientists from Environment Canada, two Canadian and two American universities. It is anticipated that wildlife and environmental studies will be prominent in the Canadian Arctic science program. Probably, there will be a return to planned baseline studies as opposed to the operations of the past four years. Most of the activity will be in the eastern Arctic. More than 140 parties will be in the field north of the mainland.■

Atmospheric Environment Service

Responsibilities

The Atmospheric Environment Service (AES) provides weather and specialized meteorological information services to Canadians. AES disseminates ice and sea-state information, weather observations, forecasts, warnings and advisories. AES does basic weather observation and maintains a communications network across the arctic, monitors air quality, conducts routine ice reconnaissance missions, and undertakes research projects to increase knowledge of atmospheric processes and the dynamics of weather, ice, and wind-wave systems.

Plans for 1979-80

AES will support extension of the operational and climatological atmospheric data networks in the arctic. The automatic station program will be accelerated where technically feasible to make full use of technological improvements while responding to the government's restraint program.

AES will continue to provide specialized forecast services to arctic operators, conduct research, maintain contract stations operated by native people, supply forecasts of ice coverage and movement, and participate in special Canadian programs such as the Ice-Covered Waters Program, the Eastern Arctic Marine Environmental Study, and the Joint Industry/Federal Government Steering Committee on Potential Problems of Hydrocarbon Production in the Arctic.

Administration Branch

Review 1978-79

An inspection program of AES facilities was expanded to include all stations in the upper air network. Stations will be inspected at least once every two years. In 1978, all upper air stations in the Atlantic Region and Central Region's High Arctic stations were inspected.

A final draft version of design guidelines for hydrogen and rawinsonde buildings was prepared. Some hydrogen buildings at high arctic stations were upgraded to current safety and operational standards. A committee to study the safety of an Aerological Data Reduction System (ADRES) presented a series of recommendations to management early in 1979.

Plans for 1979-80

Improvements in operational safety and routine inspection of arctic stations will continue. It will also insure that safety standards are maintained as ADRES is implemented at several arctic sites.

Atmospheric Instruments Branch

Review 1978-79

Maintenance technicians conducted annual major overhauls on ground meteorological detecting (GMD) systems and hydrogen generator equipment at upper air stations in the high arctic. Prototype ADRES were installed and tested at Eureka and Norman Wells, NWT. ADRES is used in conjunction with the GMD system to provide upper air data by tracking rawinsondes. Site preparation and hardware installation were completed at Thelon River, NWT, in preparation for the installation of a Modular Acquisition Processing System (MAPS) in the summer of 1979.

Plans for 1979-80

The ADRES prototype systems at Eureka and Norman Wells will be updated. ADRES will also be installed at Baker Lake, Cambridge Bay, Coral Harbour and Resolute, NWT. MAPS will be installed at Contwoyto Lake, Ennadai Lake and Thelon River, NWT, and a MARS II automatic station will be installed in Faro, Yukon, in 1979.

Atmospheric Research Directorate

Review 1978-79

In conjunction with AES' Pacific Region, the Air Quality and Inter-Environmental Research Branch conducted a field project at Beaver Creek, Yukon, in November, 1978, to assess the impact of construction activities and compressor station operations on air quality. The two-week experiment included temperature and wind profiles from tethered minisondes; daily surface observations of wind, temperature and relative humidity; measurement of the wind at the five-meter level; and continuous monitoring of inversion heights.

Scientists returned to an open water area (polynia) near the northern tip of Dundas Island in the Canadian Archipelago in March and April, 1979, to further their studies, initiated a year ago, of the polynia-atmosphere heat exchange.

Daily surface-based measurements of total atmospheric ozone are continuing at Resolute, NWT, using a Dobson ozone spectrophotometer. Each Wednesday, a vertical ozone profile from the earth's surface to approximately 30 km is obtained by using a Brewer-Mast electrochemical balloon sonde.

The Air quality Research branch gained approval in early 1979 for a Canadian Arctic Air Pollution Program (CAAPP) study of air and precipitation quality in northern Canada. CAAPP will seek to monitor space and time variations in the chemical composition of suspended particulate matter and of snow in the arctic, assess the impact of air pollution on the radiation budget of the arctic, and investigate the origin of 'arctic haze'. The research consists of: an aerosol monitoring network (four stations) to determine the chemical composition and concentration of suspended particles; a network of visibility monitors, a deposition network to collect and measure the chemical composition of the arctic snowpack; a trajectory climatology to identify the principal routes of pollutants from mid-latitude sources into the polar region. An aerosol sampler was installed at Mould Bay, NWT, April 4, 1979.

In conjunction with the Arctic Weather Centre, scientists improved the Beaufort Sea Computerized Prediction Support System for the 1978 drilling season. This included provision of a module to predict motion, spreading, evaporation and emulsification of oil slicks. An evaluation after the 1978 season pointed to further improvements for wind and sea-state forecasts. Accelerated research on the observation and prediction of ice conditions included contracts for: the development of an Ice Status System using satellite imagery; work on dynamic models to predict pack motions; a study of floe oscillations; and a review of the problem of forecasting the motion of shorefast ice. Early versions of models to predict pack-edge motions and compaction/dispersion areas in pack ice were delivered to the Ice Forecasting Central for operational testing.

Plans for 1979-80

A major field program for the polynia study is scheduled for the spring of 1980. The ozone program will continue at Resolute, NWT. Aerosol samplers will be installed at Igloodik, Alert, and Snare Rapids, NWT. Developments in dealing with oilspills will be reviewed for use in cases of emergency. Development of dynamic ice-prediction models and the Ice Status Systems will continue and operational testing of models will continue to improve predictive accuracy.

Central Services Directorate

Review 1978-79

The level of aerial and shipboard ice data collection and analysis was similar to that of the previous year. The availability of Side-Looking Airborne Radar (SLAR) on one ice reconnaissance aircraft proved particularly useful in the eastern arctic during the summer of 1978 due to an unusually extensive low-level cloud coverage of marine areas. Two workshops were held during the year to enhance SLAR interpretation skills of the ice observers.

Satellite imagery from Toronto and Prince Albert (NOAA and LANDSAT) continued to be a major complementary source of ice program data. A mid-winter round-robin flight was conducted throughout the arctic in February, 1979, using the SLAR system. These data were used to provide ice support of industry and government projects and to enhance ice climatology of the arctic. Beginning in 1978, direct transmissions were made from ice reconnaissance aircraft in the North to the Ice Forecasting Central (IFC) in Ottawa via the Department of Communication's receiving station in Almonte, Ontario.

Transmissions of ice conditions in chart form, narrative reports and forecasts from IFC to ice-sensitive shipping were enhanced in 1978 by the inauguration of facsimile broadcasts from Resolute and Frobisher Bay in addition to CFH Halifax. IFC assisted the Beaufort Sea drilling operations by providing cross-training to meteorologists at the Arctic Weather Centre, by preparing special break-up and freeze-up forecasts, and by assigning an ice forecaster to the Beaufort Weather Office at Tuktoyaktuk during the 1978 break-up period. Training in interpreting ice charts and in effective use of broadcast ice information was provided to Coast Guard personnel in Ottawa.

Routine ice climatological and advisory services were sent to government and private sector users throughout the year. With the help of summer students, an additional 23 000 km of laser surface profile data were analyzed. The development of an EDP laser data analysis and data archival system is almost complete. The interactive computerized system for analysis of digitized laser profiles, developed in cooperation with CCRS, is undergoing testing and evaluation.

Computerization of some ice forecasting operations, now under way, will accelerate with the recent acquisition of a Hewlett-Packard 1000 mini-computer. Development work has been primarily directed at evaluating and upgrading the ice drift model used in the operational program.

Training manuals, audio-visual aids and certification examinations were provided to both Arctic Community Airports and DEWline programs. Training Branch conducted formal weather observing courses at the Training Centre in Colorado Springs for staff assigned to DEWline stations in the arctic. In addition, two employees of NORDCO were trained in meteorology and forecasting for duties in connection with oil exploration in the North Atlantic.

Plans for 1979-80

Specific actions planned to improve the ice services information include: development of digital forecasting to permit introduction of system-oriented operational ice forecasting procedures; and improve the laser system on the ice reconnaissance platform to determine ice surface roughness. Roughness data are required both for ice forecast models and for ice climatology studies. Routine ice data collection, ice information and forecasts, processing of laser data and training support for arctic programs will be continued.

Canadian Climate Centre

Responsibilities

The Canadian Climate Centre (CCC) was formed April 24, 1978. The CCC is a focal point for climatological activities, including data management, information services, hydrometeorology, applications, impact assessment, monitoring, prediction and research. CCC objectives include understanding the climate, its systems, variability, and man-induced fluctuations.

Review 1978-79

The second volume of the *Climate of Canadian Arctic Islands and Adjacent Waters* was sent to press. Planning was undertaken for a detailed climatological study of Northwestern Baffin Bay for Petro Canada. Environmental Impact Statements (EIS), prepared for the ALCAN pipeline project by Norlands for Lancaster Sound, Imperial Oil for Davis Strait, and Petro Canada for the Arctic Pilot Project, were reviewed.

CCC members served the Surveillance Satellite Weather and Oceans Experiment Group, the Snow Measurement Coordinating Committee, the Water Resources Working Group, a DOE Committee on Developing a Deep Water Oil Ports Policy, an NRC Snow Engineering Working Group, and the Ice Covered Waters (ICW) program.

Projects being researched include wind climate for off-shore waters, track data of high and low pressure centres, wind conditions at Resolute, extreme conditions and impacts at high arctic sites, and a comparison of Tuktoyaktuk and Beaufort Sea climates.

Plans for 1979-80

Geostrophic winds in offshore areas will be studied under the ICW program. The climatological study of Northwestern Baffin Bay will be completed. The impact of different climatic scenarios on arctic activities, such as resource exploitation and transportation, will be considered. EIS's will be reviewed and consultation will be provided on aspects of design and operation in the North.

Field Services Directorate

Responsibilities

This directorate provides continuous up-to-date information to northerners on current weather observations, forecasts, warnings and advisories, and scientific consultation on the application of meteorological and climatological information. The directorate operates five networks of data acquisition sites, a sophisticated system of rapid communications, an Arctic Weather Centre and a Canadian Meteorological Centre, a satellite readout station, several contract stations and scientific support offices.

Review 1978-79

The Weather Station on Ellef Ringnes Island, named in honour of cartographer, G.I. Isachsen, was officially closed down on September 19, 1978, after 30 years of operations. The closure was made necessary as a result of the federal government's cost reduction program.

Renovations were made to several AES buildings at Alert, NWT, during the summer of 1978, others were closed as personnel moved into DND quarters in August. Devices to assess atmospheric corrosivity were installed for EMR at 20 arctic sites on July 1, 1978. In September, 1978, AES' Central Region Headquarters and the Prairie Weather Centre were re-located in Winnipeg. All three AES Regions (Western, Central, Quebec), now engaged jointly in the management and operation of weather stations in the arctic, have integrated centres in Edmonton, Winnipeg and Montreal, respectively.

There were two fires at Baker Lake in 1978-79. On December 8, a dwelling was destroyed and on February 21, 1979, the balloon inflation building and hydrogen electrolyser room were destroyed. The hydrogen inflation building at Fort Smith was destroyed on March 28, 1979, by an explosion that occurred while the radiosonde balloon was being handled.

Contracts involving weather observing and observer-communicator functions by Inuit at Pond Inlet and Cape Dorset were re-negotiated with the local Cooperatives in the spring of 1979. The surface weather observing program at Fort Smith was transferred from AES to Transport Canada April 1, 1978. AES assumed operational responsibility from Transport Canada for Ennadai Lake on April 1, 1979.

The coldest February mean temperature on record for all locations in North America was shattered in 1979 when Eureka dropped three degrees lower than the previous record to a frigid -47.9°C.

The Very High Resolution Radiometer (VHRR) satellite readout station, installed in the new AES Centre in Edmonton October 31, 1977, has been providing excellent satellite imagery for use in the Arctic Weather Centre. Developmental work on sea surface temperature extraction from satellite data commenced in the fall of 1978. Special satellite imagery was relayed to the Ice Forecasting Central and to the Beaufort Weather Office.

Environmental assessments of the impact of northern projects were reviewed by AES' Scientific Services Divisions. Projects included the Petro Canada Arctic Pilot Project and offshore drilling projects in Lancaster Sound, northern and southern Davis Strait. Continuing review of Liard Highway plans was carried out and a proposed management plan for the Dempster Highway was reviewed. A MATER system was installed at Horsecap Hill in the Yukon to monitor winds and temperatures at a high valley station on the proposed Alaska Highway Pipeline route. Work was started on the evaluation of the climatological network in the Mackenzie Basin.

FSD operates three types of permanent meteorological observing networks - synoptic, upper air and climatological - in accordance with established international standards.

There are 50 sites in the synoptic network where surface-based instruments and visual measurements of air temperature, humidity, barometric pressure, wind, cloud, precipitation and visibility are made as required for aviation. These observations are transmitted immediately on AES communications circuits for local, national and international use.

At the 14 upper air stations, in-depth soundings of the arctic atmosphere are taken twice daily. These observations of temperature, humidity and wind to an altitude of 30 km are transmitted to regional, national and international weather centres.

The climatological network consists of 101 sites where precipitation and daily temperature extremes are recorded. Data go monthly to regional offices and AES Headquarters in Downsview, Ontario.

Arctic Aviation Weather Reporting Stations (AAWRS) are certified at Aklavik, Eskimo Point, Faro, Fort McPherson, Fort Resolution, Fort Simpson, Grise Fjord, Holman Island, Old Crow, Pangnirtung, Rankin Inlet, Repulse Bay, Sanikiluaq, Whale Cove and Wrigley. Hourly reports are made at these communities in support of aviation activities. The Canadian Network for Sampling Precipitation (CANSAP) sites at Fort Reliance, Fort Simpson, Inuvik, Mould Bay and Whitehorse determine chemical pollutants in the atmosphere by analyzing precipitation samples. An aerosol monitoring sampler was installed at Mould Bay April 4, 1979.

During the navigation season, 16 government vessels and seven commercial ships reported marine weather.

Several other observation programs continued in 1978-79. These included 54 reporting on freeze-up and break-up dates of ice cover; 28 reporting weekly measurements of ice thickness; 28 reporting shore ice conditions; and 27 reporting weekly on depths and water equivalent of snow accumulation.

Duration of bright sunshine was recorded at 25 sites; observations of noctilucent cloud at 17 sites; solar and terrestrial radiation at 15 sites; soil temperatures at a number of levels below the earth's surface at seven sites; and water evaporation during the summer season at eight sites. Weekly carbon dioxide (CO₂) flask sampling continued at Alert, (one of three monitoring stations in Canada). Air turbidity was measured at Fort Simpson. Daily measurements of the total ozone in the atmosphere, and weekly measurements of the ozone layer in the high atmosphere, were reported by the upper air station at Resolute. An air sampler to collect samples for atmospheric radioactivity was operated at Hay River.

Programs for other government agencies continued at AES Arctic Stations. AES operated and maintained a neutron monitor gamma-ray project at Alert for NRC's Herzberg Astrophysics Institute, Ottawa. Radioactive atmosphere sampling was carried out at five sites for the Department of National Health and Welfare. Seismological records were observed for EMR at Baker Lake, Inuvik, Frobisher Bay and Whitehorse and Geomagnetic observations were recorded at Baker Lake and Churchill. Support was provided to EMR at Resolute, Alert and Mould Bay. AES continued to operate High Arctic Weather Stations and provided a wide range of support to government and other scientific agencies at Eureka, Mould Bay and Sachs Harbour.

The staffing of the principal (synoptic and upper air) weather stations at the end of 1978-79 was: AES, 12; CATA (DOT), 10; AES/CATA, nine; DEWline, 16; DEWline/CATA, one; contract, six; automatic, one; automatic/CATA, one.

Courses to train native people as observer-communicators for AAWRS sites were held in Fort Smith in August and October, 1978, and in April, 1979.

During the year, approximately seven man-years were devoted to inspection activities in the arctic. This included preparations at the inspectors' regional headquarters in Montreal, Winnipeg and Edmonton, on-site quality control of weather observing procedures, staff training, site selection for new stations, maintenance and installation of meteorological instruments and equipment, a one-week workshop.

Remote temperature indicators have been converted to metric at most arctic stations. Two 150 kW diesel power plants were airlifted out of Isachsen and installed in Mould Bay. Two new 250 kW diesel power plants were airlifted out of Isachsen to Eureka for installation later. Heat recovery units, planned for Isachsen, were transferred to Eureka and Mould Bay. A steel warehouse was erected at Mould Bay in the fall. Renovations were completed to buildings at Alert in 1978 and to weather office and warehouse at Hall Beach in the spring, 1979. The instrument site at Cape Dyer was moved and the anemometer readings are now representative of the airstrip. Installation of a digital remoting system for the standard U2A wind equipment, planned for Clyde last summer, has been rescheduled to 1979. The Sachs Harbour water pipeline project was completed in mid-September, 1978.

Various communications facilities in AES' northern operations transmit weather data on a real-time basis for national and international use. Both teletype and facsimile communications are used through a combination of Transport Canada-operated radio circuits, DEWline forward scatter facilities and common carriers, some of which use ANIK. For example, the weather offices at Frobisher Bay and Resolute receive charts prepared by the Arctic Weather Centre, the Ice Forecasting Central, and the Canadian Meteorological Centre via ANIK from Montreal. During the shipping season, some of these charts are relayed by HF to Coast Guard ships. A number of stations in the Yukon and NWT, including Inuvik, Whitehorse and Yellowknife, have direct connections to the national weather facsimile system, operated by CN/CP.

While airborne, ice reconnaissance aircraft make scheduled radio facsimile broadcasts to ships in northern navigation areas. After each flight, ice reconnaissance observers, operating out of Frobisher Bay, Inuvik and Resolute, transmit the most recent ice data to the Ice Forecasting Central in Ottawa. The old Muirhead equipment was replaced by Alden 9165L facsimile scanners in June, 1979, at these three stations.

Weather forecasts for the North are issued regularly by AES. Weather forecasting uses data from the Canadian North and all the northern hemisphere. The Canadian Meteorological Centre (CMC) in Montreal is responsible for broad-scale weather analyses, prognoses and selected forecast material. The centre has a large computer and access to weather satellite data and information from the World Meteorological Centre in Washington. Information from CMC is distributed throughout Canada, including the North.

The Edmonton Arctic Weather Centre produced forecasts for the NWT and Whitehorse produced for the Yukon.

Current and predicted weather information for northern areas included:

- high-level wind and temperatures for aviation, produced by computer in Washington and distributed in Canada by teletype and facsimile;
- lower-level wind and temperatures for aviation, produced by computer in the CMC in Montreal and distributed by teletype;
- weather forecasts for aviation, issued from the Yukon Weather Office and the Arctic Weather Centre and distributed by teletype and radio;
- general weather summaries and forecasts prepared at Whitehorse for the southern and central Yukon, at Edmonton for selected locations in the NWT, and for Northern Labrador region, added this year;
- marine forecasts prepared during the shipping season for arctic coastal waters, Hudson Bay and the inland waters of Great Slave Lake, Great Bear Lake and the Mackenzie River;
- fire-weather forecasts, prepared during the forest fire hazard season by the Whitehorse Weather Office and the Arctic Weather Centre for the Yukon and Northwest Lands and Forest Services.

A presentation technician, assigned to the forest area control centre in Fort Smith, and a meteorologist in Whitehorse provided fire weather services for particular user needs.

A number of special forecasts were prepared such as the land survey mapping of the Borden and Brodeur peninsulas, the SURSAT experiment, the LOREX operation. Photo forecasts were provided to the Northwest Survey Corporation and a storm report on the February, 1979, blizzard in Frobisher Bay was sent to the Minister.

Weather briefings, presentations and consultations were available at Whitehorse, Yellowknife, Inuvik, Resolute, Frobisher Bay and Churchill. A more limited type of weather service was available at many other points with connections to the AES Communications System.

Plans for 1979-80

FSD will maintain all regular observations, communications, forecasting and inspection programs, including special projects for forestry, agrometeorology, air pollution, resource development and community airports. CANMAR and Imperial Oil drilling operations in the Beaufort Sea will be provided with meteorological, wind-wave and ice information and forecast services from the Arctic Weather Centre and the Ice Forecasting Central. An advance support base will again operate at Tuktoyaktuk. A meteorologist Offshore Drilling position at the Arctic Weather Centre will supply additional support to eastern arctic oil exploration activities.

Extension of the weather teletype circuit 110 from Hay River to Sachs Harbour, via ANIK satellite facilities is planned. At present, data are telephoned out to Inuvik. The new facilities will allow Sachs Harbour to transmit and receive meteorological data in real time. Circuit 110 will be upgraded to minimize current delays in traffic input.

A study of extreme storms in northwestern Baffin Bay will be undertaken by meteorologists. A Polar Gas Pipeline EIS will be reviewed. The Mackenzie Basin network study will be completed. Consultation will continue on environmental implications of arctic developments.

Additional AAWRS sites will become operational at locations where the air terminal buildings are to be installed. Inspection and on-site refresher training will be provided by AES regional inspectors. FSD instructors will be involved in three formal training courses in Fort Smith.

New balloon buildings will be constructed at Baker Lake and Fort Smith. Prototype ice drilling equipment will be tested at Baker Lake. ADRES will be installed at upper air stations in Baker Lake, Cambridge Bay, Coral Harbour and Resolute this fall. Automatic weather stations will be installed at Contwoyto Lake, Ennadai Lake, Faro and Thelon River this summer.

Environmental Management Service

Lands Directorate

Responsibilities

The director EMS researches and provides data on the ecological characteristics and use-capabilities of land; changes in land use; and land use issues of national significance. The directorate develops systems for the collection, storage, and presentation of data on land quality and land use. The directorate also provides policy advice on land matters, promotes environmentally sound land planning and management and undertakes cooperative land research and planning programs with other federal agencies and the provinces.

Land Data and Evaluation Branch

Review 1978-79

With the support of the Arctic Land Use Research (ALUR) Program of DIAND, the Land Use Monitoring Division published 28 Land Use Information Series maps covering the Bear Slave Upland, District of Mackenzie.

These maps (scale: 1:250 000) integrate a wide range of data on renewable resources and related human activities. The series, which covers all of the western arctic mainland, includes information on wildlife and fish areas, tourism potential and facilities, native hunting and trapping activity, community information notes, development areas and block land transfers, forest, mineral, and soil resources, archaeological and historical sites, proposed International Biological Program (IBP) reserves and parks and sanctuaries.

In conjunction with this program, the Ecological Land Classification and Evaluation Division provided a generalized biophysical and ecological overview, which describes the climatic conditions, physiography, vegetation, and surficial geology of the area.

Ecological land surveys of the Northern Yukon and the Caribou Range, southeast of Great Slave Lake, were completed during 1978-79. This information has been entered into the Canada Geographic Information System.

Plans for 1979-80

Compilation and drafting of 26 Land Use Information Series maps are under way for the Kazan Upland area in southern Keewatin. Field research will be carried out in the Wager Bay-Back Lowland area in the northern Keewatin during the summer of 1979. Publication of 31 additional maps is expected in 1980.

The Ecological Land Classification and Evaluation Division will produce an overview of the ecological characteristics for use in land planning and policy evaluation at the regional level. This work involves interpreting imagery, conducting reconnaissance overflights and field checking.

Policy Research and Coordination Branch

Review 1978-79

A report in the series *Land Use Programs in Canada* was published in 1979 for the Yukon Territory. This report outlines the roles of the federal and territorial agencies engaged in land use planning and/or land management in the Yukon. The report also deals with concerns and issues related to land use and land management.

This branch also participated in studies of the environmental aspects of native land claims in the Yukon and Northwest Territories.

Pacific and Yukon Region

Review 1978-79

The Lands Regional Office coordinated the accelerated environmental baseline studies program for the Yukon portion of the proposed Alaska Highway natural gas pipeline. This program identifies important areas of environmental concern. This office coordinated the joint (Department of Environment and Department of Fisheries and Oceans) review of both the Environmental Impact Statement (EIS) and the Environmental Terms and Conditions document for presentation to the EARP panel hearings.

The Regional Office was represented on two EARP panels: The Shakwak highway improvement project and the Alaska Highway natural gas pipeline.

The office also completed two studies for the Land Resources unit, DIAND (Yukon), an evaluation of land resource information for settlement suitability in the Whitehorse-Carcross-Jakes Corner area; and completion of land status and land use mapping along the Yukon road systems.

Plans for 1979-80

The Alaska Highway gas pipeline and the EIS for the Dempster lateral natural gas pipeline will be reviewed. A review may also begin of the environmental implications of the Yukon portion of the proposed oil pipeline from Skagway, Alaska, to Alberta.

Canadian Forestry Service

Responsibilities

The service advises and assists DIAND on forestry operations, practices and staff training; participates in environmental impact assessments of industrial developments; conducts forest insect and disease surveys; prepares forest inventories and maps of forest and other vegetation and conduct ecological research in the North. It compiles national statistics on forest stocking, growth, depletion and annual fire losses.

Pacific Forest Research Centre

Responsibilities

Research and advisory services are conducted under the auspices of the Yukon Forest Research Advisory Committee. This committee of senior federal officials with Yukon responsibilities advises the PFRC on forestry research needs and priorities in the Yukon.

Review 1978-79

As part of the International Society of Soil Science Congress in Edmonton last June, 35 persons representing eight countries were conducted on a tour of the Dawson City and Inuvik areas. The party spent five days in Dawson City studying terrain features in the unglaciated portion of the discontinuous permafrost zone before moving on to Inuvik. Details of this tour are provided in a publication entitled *Guidebook for a tour of Soil, Permafrost and Vegetation Relationships in the Yukon and Northwest Territories of Northwestern Canada, Tour 18*.

Work in the Nisutlin Test Area was completed and a report is nearing completion. This study involved people from the Forest Management Institute, PFRC, Yukon Territorial Lands and Forests Service, and DIAND. Reports and maps on surficial deposits and landforms, existing vegetation, computer-assisted forest land classification, potential vegetation, forest cover type and forest capability were produced for over 250 km² of the Nisutlin Management Unit. A study of biomass was also included.

Work began on mapping the terrain, vegetation and forest capability of the Lake Laberge Ecoregion (ER5) at a scale of 1:250 000. Most of the area between 60° and 61°N. latitude was covered, including that in the Nisutlin Test Area.

The information retrieval system has been up-dated to include fire history through 1977. A report produced on the system was published in a report entitled "Yukon RRAMS, Resource and Management Statistics".

A study of the land resource for settlement suitability of the so-called *Carcross Triangle* was conducted by the Lands Directorate and PFRC of the Land Use Section of DIAND in Whitehorse. Terrain features were described and mapped and the vegetation was discussed in relation to the land resources. Sensitive areas were identified. A fire-report type of document was produced: *Evaluation of Land Resource Information for Settlement Suitability (Whitehorse-Carcross-Jakes Corner Region)*.

The centre is responsible for the certification of tree seed for export under OECD rules. PFRC inspectors certified 300 kg of seed valued at a minimum of \$120 000 from 17 different locations in the Yukon. A further 350 kg of uncertified seed was tested and reported to the Swedish Board of Forestry as suitable for import. In addition, Senior Scandinavian Scientists were conducted on a tour to identify sources of seed for export.

Ground surveys of forest pests in the Yukon Territory were conducted between June 19 and July 14, 1978. Except for three small new infestations of large aspen tortrix, insect populations declined throughout the Yukon in 1978. A needle disease caused conspicuous discoloration of lodgepole pine over large areas, and a canker disease caused mortality and dieback of white spruce, particularly around Minto Landing.

The spruce beetle (*Dendroctonus refipennis*) problem reported in 1976 and 1977 at Marshall Creek declined, with no attack of green standing spruce trees. Along the Aishihik power project canal, a few flood-weakened trees were lightly attacked by beetles in 1978. However, since the majority of beetles in this area have a two-year life cycle, the progeny will emerge in 1979 and may attack additional trees. Populations of larch budmoth (*Zeiraphera improbana*) declined and defoliation of eastern larch was not noticeable in previously affected areas near Watson Lake and in the Hyland River Valley. Lodgepole pine and spruce stands at a number of locations were examined for black stain root disease (*Verticicladiella wagnerii*), but none was found. Limited mortality of white spruce, caused by a brown cubicle rot (*Coniophora puteana*) occurred near Marsh Lake along the McClintock River and near Stewart Crossing. A report on forest insect and disease conditions for 1978 was sent to forest managers in the Yukon.

Fire research personnel consulted on fire prevention, fuels management, the Canadian Forest Fire Weather Index and the operation of the PFRC aerial ignition device.

Vegetation studies were carried out, yielding information on plant species and vegetation communities, site sensitivity, and permafrost occurrence. An assessment was made of these aspects of the environmental impact statement proposed by Foothills Pipeline Company. Recommendations for improvements were submitted. Detailed maps of vegetation in the pipeline corridor were prepared and a number of reports and publications are in progress. PFRC personnel participated in public hearings on the Alaska Highway pipeline and provided advice to the Ministry of Transport regarding environmental assessment along this route.

Plans for 1979-80

The Lake Laberge Ecoregion study is expected to be concluded during 1979-80. A computer-assisted classification of satellite tapes will be the stratification for the northern part of the ecoregion, and forest capability determinations will be conducted in these strata.

The annual cone crop survey will be conducted. An evaluation will be made of stands to identify those from which seed should be exported. A computerized information storage and retrieval system will be developed for forest genetic resources in the Yukon.

A second replication of regeneration trails will be assessed in September. One trial will evaluate the Finnish Hakmet System's effectiveness in regenerating white spruce on flood plains in the Yukon. An on going demonstration forest project will be reassessed. Membership will be sought on the International Committee on Forest Lands of Northern Latitudes.

A Forest Insect and Disease Survey will continue in 1979, with a reduction in field time necessitated by illness among senior field staff.

PFRC Fire Research will continue to provide an advisory service to the Yukon Territorial Lands and Forests Service in 1979-80. Information and advice will be available on fire-danger rating, meteorological influences, fuel management and use of infra-red fire detection equipment. Further demonstrations and instructions on use of the aerial ignition device will be provided on request.

PFRC staff will participate in assessment of the environmental impact statement for the Dempster lateral gas pipeline, the Alaska Highway oil pipeline and in vegetation studies on these and other projects, as required.

Northern Forest Research Centre

Review 1978-79

NFRC assisted in a study to assess a 50 000 km² area in the Norton-Anderson Basin for potential national park reserves. Advice was provided on the environmental impact assessment of the Liard Highway. Advisory services were also provided to the Mackenzie Forest Service. Field work was continued to develop guidelines for fire management planning in the Wood Buffalo and Nahanni National Parks. NFRC supervised the aerial photography of the Peace-Athabasca Delta.

Plans for 1979-80

A study will be undertaken with the MacKenzie Forest Service which uses satellite imagery to develop a data base for fire and timber management. National Parks requests will be met, as needs and resources permit. Liaison services will continue to be provided in the areas of forest management and environmental concern.

Forest Management Institute

Review 1978-79

The results of the Nahanni National Park biophysical survey were published in a report: *Forest Inventory in the Yukon using Large-Scale Photo Sampling Technique*. A base map of the specific 3 000 km² area studied was constructed and provided to the Yukon Territorial Lands and Forests Service.

Advice was provided on the biophysical aspects of forest management.

Plans for 1979-80

The information collected and the techniques developed in the Nahanni project will be applied in research to develop the computer-assisted presentation of biophysical resources information at the Petawawa National Forestry Institute.

Canadian Wildlife Service

Responsibilities

The Canadian Wildlife Service conducts research, manages and administers programs concerning migratory birds under the Migratory Birds Convention Act and the Canada Wildlife Act. The service coordinates federal, provincial and territorial action on common wildlife problems; conducts surveys and inventories of wildlife; undertakes research on wildlife species in relation to their habitat; collects and analyzes animal population and utilization data; and studies wildlife diseases and the effects of toxic chemicals on wildlife.

Migratory Birds Projects

Review 1978-79

A two-year pilot study for a proposed large-scale ten-year banding program on the Lesser Snow Geese of the eastern arctic was conducted near Eskimo Point, NWT. Activities of the pilot study included banding 78 000 Snow and Blue Geese in the McConnell River area and determining the number of geese nesting on the West Hudson Bay colonies near Eskimo Point (160 000 pairs). The study team included Inuit from the Eskimo Point community, CWS biologists, and staff from the Texas, Louisiana, Oklahoma and Nebraska Game Commissions. The data are being analyzed to determine the value of the proposed long-term study which could be initiated in 1981 or 1982. This work was funded by the US Fish and Wildlife Service, the Mississippi and Central Flyway Councils and CWS.

As part of a program with the US Fish and Wildlife Service, CWS banded 1 600 White-Fronted Geese in the Anderson River Delta. This was part of a five year US-Canada White-Fronted Goose - Mallard banding program.

The Canadian Wildlife Service continued its on-going Whooping Crane program in Wood Buffalo National Park. This program involves research into the breeding biology and population ecology of the only wild flock of Whooping Cranes in the world, as well as a program with the US Fish and Wildlife Service to transplant excess Whooping Crane eggs to Gray's Lake, Idaho. These eggs are placed in Sandhill crane foster nests in an attempt to create a second wild flock.

CWS participated in the Native Land Claim Negotiations, particularly the submission to COPE.

CWS also participated in the Mackenzie River Basin study program. In the Slave River Delta study, assessments were made of migratory bird resources. In a related project, available resource information was reviewed for 37 sensitive areas within the basin.

Raptor and colonial bird population surveys were conducted in the east arm area of Great Slave Lake. Important raptor nesting areas were delineated.

An inventory of migratory birds effected by dredging in the Mills-Beaver Lakes area was completed in 1978. It was concluded that present levels of dredging do not have major effects on migratory bird populations.

CWS participated in the EARP review of proposed oil development in Lancaster Sound. The environmental impact statement was reviewed. It was recommended that drilling be suspended until adequate contingency plans were developed to handle a blow-out.

Plans for 1979-80

The final year of the White-Fronted Goose banding program in the Anderson River Delta area will be completed. Whooping Crane investigations at Wood Buffalo National Park will continue as will the Whooping Crane egg transplant programs in Gray's Lake, Idaho.

CWS will cooperate in the 1980 North American Perigrine Falcon Survey. The service will complete the Slave River Delta study, finalizing spring migrant surveys of migratory birds.

CWS will also participate in environmental monitoring in the Strathcona Sound area. A program involving CWS, CFS and DIAND will monitor heavy metal levels in seabirds, fish and mammals.

Seabird inventories will be conducted in the Summer Harbour - Cape Perry area to determine the effects of construction of a proposed transport terminal on populations.

In the Hudson Bay region, CWS will participate in population studies of the Lesser Snow Goose. Snow Geese and Brant will be banded on Southampton and Baffin Islands.

Mammalogy Studies

Review 1978-79

Major studies on the population, biology and behaviour of Polar Bears continued. These studies were centred in the western arctic, out of Resolute Bay.

The inter-island movement of Peary Caribou was investigated. This study will be completed in 1979-80. Work was also done on the population ecology of Peary Caribou and on the digestibility of winter forage.

Plans for 1979-80

A Federal-Territorial agreement has been reached between CWS, DIAND and NWT Wildlife Service on wildlife research north of 60°. Projects included in this agreement are:

- Polar Bear studies in the western, central and eastern arctic. These studies are long-term; progress reports are available.
- Inter-island caribou studies; the field studies should be completed this year. Population studies on caribou are being expanded to include the Kaminuriak and Beverly herds.
- Investigations on the feasibility of transplanting Wood Bison to their former range in the Nahanni Butte - Lower Liard River area. If investigations locate a feasible area Wood Bison will be transplanted during 1980-81.
- Ungulate production studies in the Liard Valley.

Environmental Studies

Review 1978-79

Surveys were conducted on behalf of Parks Canada in areas considered as sites for national parks, especially the Anderson-Horton River areas and Bathurst Inlet.

Eastern arctic Polar Bear population studies started under the auspices of EAMES, and will continue into 1979-80.

Plans for 1979-80

A study will estimate the effects of climatic variation on populations of barren-ground and Peary Caribou, wherever long-term data on weather and caribou populations exist.

The Pathways of heavy metals through the ecosystem are being investigated. This year, a preliminary survey was conducted in areas of high concentration.

Studies will continue on the effect of the Dempster Highway and the proposed pipeline on the Porcupine caribou herd.

Inland Waters Directorate

National Hydrology Research Institute

The National Hydrology Research Institute was established in Ottawa on April 1, 1979. Three divisions were created to specialize in scientific studies of surface water, ground water, and snow and ice. These studies include both process and applied research, as well as modification and development of instrumentation and technology for laboratory and field analysis.

Hydrology Research Division

Responsibilities

The Hydrology Research Division conducts research programs with emphasis on the development of hydrological techniques, methodologies and instrumentation for water resource evaluation. The division is concerned with the identification of research needs in operational hydrologic studies and the implementation of research projects to meet these needs. It specializes in ground water studies, the study of hydrology phenomena such as evaporation, and the development of precipitation-runoff models. These studies will now be shared between the new Surface Water and Ground Water Divisions.

Review 1978-79

Thermal regime and ground water conditions are being investigated beneath rivers which freeze to their beds in areas of continuous permafrost. During 1977-78 ground temperatures were monitored at two river crossings near Inuvik, NWT.

Investigations into frost mounds and sink hole depressions in the Norman Wells area were completed in 1978. Time lapse cameras successfully recorded growth and decay of frost mounds and filling and drainage of large karst depressions.

Field studies in the Pine Point region included collection of water samples for ion and isotope analysis and construction of runoff gauging stations. The gauging stations were located at sulfurous spring outlets and along a creek having high salt concentration. A ground water study was undertaken at Nanisivik Mine on Northern Baffin Island. Field work was completed for a landslide study near Fort Smith. Hydrogeology advice was provided at several mining sites to the NWT Water Board and Environment Canada's Mining Committee.

Plans for 1979-80

Modeling of ground temperatures beneath arctic streams is planned for 1979-80. The results will be compared to temperatures recorded at stream-crossings near Inuvik and on Melville Island. The ground water discharge and icing areas along the Alaska Highway will be studied and other studies will continue in the Pine Point area.

Glaciology Division

Responsibilities

The Glaciology Division studies hydrologic processes in the North and their impact on northern development; researches the mechanical and electrical properties of ice and snow; constructs snowmelt and glacier melt models, examines mountain snowpacks, snow metamorphism and other aspects of alpine hydrology; and develops and maintains an inventory of perennial snow and ice in Canada. These responsibilities will now be shared between the Surface Water Division and the Snow and Ice Division of the new Institute.

Review 1978-79

Preliminary work was conducted in preparation for ice core drilling on Mount Logan, in the Icefield Ranges of the St. Elias Mountains, YT. A proxy climatic record will be developed from the stratigraphy and oxygen isotope contents of the ice core.

The Liard River and its tributaries were examined for sediment production zones and suspended sediment generation. This work supports studies of the spring flood by the Mackenzie River Basin Committee.

Thermal mixing at major tributary junctions along the Liard River was studied using thermal infrared remote sensing techniques.

Hydrologic studies continued along the Liard Highway right-of-way to investigate the effects of the highway on adjacent water resources and to update design curves for stream crossings.

Field investigations were carried out in the Vonjek River and Shakwak Trench regions of the Yukon to assess evidence of past outburst floods from glacier-dammed lakes.

The inventory of perennial snow and ice in the Yukon was extended by including 35 new basins.

In the lower Mackenzie Valley near Inuvik, the active layer thermal regime was monitored in a small drainage basin to obtain basic hydrologic data in an area of continuous permafrost.

Aufeis along the proposed highway extension from Inuvik to Tuktoyaktuk was examined for its ramifications on highway design and construction.

An aerial photography research program continued into ice break-up, ice jamming and ice shove on the Mackenzie and Liard Rivers. Rephotography of northern settlements and photogrammetry of White Glacier on Axel Heiberg Island were undertaken.

Plans for 1979-80

Most Glaciology Division projects will continue.

Northern road studies will concentrate on the Inuvik-Tuktoyaktuk extension.

Studies of the spring flood in the Liard-Mackenzie river system will continue with emphasis on sediment yield zones, sedimentation and the effects of regulating the flow of each river.

The aerial photography program will be limited to the Liard and Mackenzie valleys during break-up. No photography will be carried out in the high arctic.

Studies of ground ice and aufeis will be expanded on Tuk Peninsula and on the NWT portion of the Dempster Highway.

Preliminary work on site selection for ice coring on the Penny Ice Cap will include radio echo sounding from the ice cap surface as well as by aircraft with US cooperation.

Water Quality Branch

Responsibilities

The Water Quality Branch collects, analyses, interprets and disseminates water quality data. These data are obtained from specific reference points across Canada, augmented by detailed information collected in comprehensive surveys.

Review 1978-79

The branch supports federal programs relating to national parks and data collection and surveys in the Yukon and Northwest Territories. The branch participates in the analysis of samples and the storage and dissemination of data collected in the territories, in cooperation with DIAND. This work is administered by a group from the Inland Waters Directorate laboratory at Calgary.

Plans for 1979-80

The branch will take part in northern basin studies with DIAND and other water-oriented services in Environment Canada. Water quality trends in northern surface waters will be assessed.

Water quality objectives have been proposed for the NWT and the Yukon by an interdepartmental working group. These objectives, covering water quality management planning and the preparation for effluent discharge permits, have been recommended to the Territorial Water Boards.

Water Planning and Management Branch

Responsibilities

This branch develops comprehensive water resource studies; programs to reduce flood damage and improve water management; and an advisory service to the Northwest Territories and Yukon on water planning and management matters. The branch participates in environmental assessments of development projects.

Review 1978-79

The branch participated in the review of water management aspects of projects under the Environmental Assessment and Review Process (EARP).

Such northern activities as oil and gas pipelines and mining developments were assessed. The branch also participated in studies of environmental effects of the Alaska Highway gas pipeline proposal.

An agreement between federal and NWT governments on the Flood Damage Reduction Program has been signed. A similar agreement with the Yukon government has been drafted.

An intergovernmental study agreement respecting federal-provincial cooperation in the Mackenzie River basin was signed by the governments of Canada, Alberta, British Columbia and Saskatchewan by May, 1978.

Work on the flood risk mapping program for Hay River was completed.

Plans for 1979-80

Formal agreement is expected on a Flood Damage Reduction Program in the Yukon. The flood risk mapping will commence for several centers in the Northwest Territories.

A task force set up by DIAND and Environment Canada is expected to prepare the rationale and plan for a cost-shared study agreement respecting the Yukon River basin. British Columbia has accepted a role on the task force.

Studies by the Governments of Canada, British Columbia, Alberta and Saskatchewan, covering Mackenzie River water resources and of downstream effects of development projects, will progress substantially.

Water Resources Branch

Responsibilities

The Water Resources Branch formerly consisted of the Glaciology, Applied Hydrology, Hydrology Research and Water Survey of Canada Divisions. The branch was restructured effective April 1, 1979. The Glaciology and Hydrology Research Division are now part of the National Hydrology Research Institute. The former Applied Hydrology Division and the Water Survey of Canada Division, along with the Lake of the Woods Control Board Secretariat, form the new Water Resources Branch.

(The review of 1978-79 activities is presented on the basis of the old structure, whereas the plans for 1979-80 are made on the basis of the new organization.)

Water Survey of Canada Division (Headquarters)

Responsibilities

The Water Survey of Canada Division (Headquarters) provides technical support to the Survey's Regional Offices. It develops techniques, instrumentation and standards for the collection of stream-flow, water-level and sediment data; instrumentation and standards in handling data and publication of resultant records; network planning for sediment; non-routine field surveys, including discharge measurement of large rivers; surveys sediment deposition in reservoirs; photogrammetric surveys of glaciers; morphological surveys and studies of river channels, basins and estuaries.

Review 1978-79

Data collection Platforms (DCPs) which transmit water levels and other data to the LANDSAT-2 polar-orbiting satellite, have been operating since July, 1972. A similar system, using the Geostationary Operational Environment Satellite (GOES) system, has been in operation since May, 1974. In 1977, equipment was installed at the Prince Albert Satellite Station to receive LANDSAT and GOES data. Real time data were received at Prince Albert for the first time in July, 1978.

Plans for 1979-80

A contract for the development of Canadian-made DCPs has been let and delivery is expected in August, 1979. These units will operate with GOES and TIROS-N, a polar orbiting satellite that will provide operational service similar to LANDSAT. The feasibility of receiving TIROS-N data at Prince Albert will be investigated.

Work will continue on a program to improve procedures for measuring the winter flow of arctic rivers. Work on developing procedures for measuring large rivers will continue.

Water Survey of Canada Division (Regional)

Responsibilities

Water Survey of Canada (WSC) collects, computes, and publishes surface water data for most of Canada in cooperation with provincial governments and other federal departments. Besides operating a network of hydrometric gauging stations, WSC cooperates with other sections of the Inland Waters Directorate in collecting water samples for analysis. It also constructs, operates and maintains water-level recording stations to provide information on tides and water levels for the Hydrography Branch of Ocean and Aquatic Sciences. The division operates laboratories for the analysis of suspended sediment and bedload samples.

Review 1978-79

One hundred and twenty-five gauging stations were operating in the Northwest Territories and 52 in the Yukon Territory. Sediment observations were made at two sites in the Northwest Territories and six in the Yukon.

In 1978-79, four new hydrometric gauging stations were installed along the route of the Alaska Highway gas pipeline. The tidal gauge network and Mackenzie River water-level forecasting program was continued. Water supply work at Strathcona Sound, Baffin Island, was expanded.

The Water Survey of Canada now operates nine DCPs in the Northwest Territories, one of which was installed in 1978-79.

Plans for 1979-80

Planning and operation of water quantity surveys in the Yukon and Northwest Territories will continue, guided by the coordinating committees established by Environment Canada and DIAND. The Water Survey of Canada will carry out field activities and publication of data.

In the Yukon, one additional stream station will be constructed and two others will undergo major reconstruction. The sediment station on the Liard River will be reactivated at the request of the Mackenzie Basin Interdepartmental Liaison Committee. An investigation of the Slave River Delta, sponsored by the same committee, will continue.

In the Baker Lake area, a spring break-up study will be conducted and three rivers in the area will be measured continuously to provide rating curves.

Five additional DCPs will be installed in the Northwest Territories.

Environmental Protection Service

Responsibilities

The service (EPS) ensures that the federal government's regulations concerning environmental protection are enforced. It is concerned with air and water pollution control and solid waste management, as well as environmental contaminants, environmental impact assessment and control and environmental emergencies. The service is the department's contact with industry and corresponding provincial agencies on environmental protection. In the North, the service operates through district offices in Whitehorse and Yellowknife.

Air Pollution Control

Responsibilities

This group monitors and controls air pollution from federal and private sectors in the two territories, under the terms of the Clean Air Act.

Review 1978-79

A continuous record of carbon monoxide levels was obtained during a three-month period in the downtown core of Yellowknife. Data collected indicate generally desirable levels of CO in the air.

Three Hi-vol and 13 dust-fall samples continued to monitor the amount of arsenic deposition in the Yellowknife area. Compared to the 1975 data there has been a significant reduction (30 per cent) in the quality of arsenic emitted from mining operations in the Yellowknife area.

The operation and maintenance of the NAPS station at Yellowknife continued.

An air emission survey was conducted at the Norman Wells refinery and discussions were held with company officials on controlling burning of waste hydrocarbons.

In 1978-79 the Yukon office continued to operate the National Air Pollution Surveillance station. Special cold weather surveys were conducted on carbon monoxide and oxides of nitrogen.

Lead free gas availability was an issue in Yukon due to the large number of American tourists in the territory. A sampling program was instituted to check compliance with the Federal Lead Free Gas Regulations.

Agreement was reached with YTG regarding conversion of Arctic Mining Emission and Asphalt Paving Guidelines into territorial regulations under the existing Public Health Ordinance. The Cassiar Asbestos shut down ended discussions with that company regarding implementation of the Asbestos Mining and Milling Guidelines.

The closure of Clinton Creek presented problems such as the stabilization of the tailings pile and fugitive asbestos emissions. Studies were undertaken by the Yukon Territory Water Board and the company and consultants were hired to study these problems.

The report *A Survey of Air Pollution Control Systems in the Yukon Base Metal Mines* was published.

Plans for 1979-80

Air monitoring surveys at Pine Point and the Con Mine will assess compliance to the Arctic Mining Air Emission Guidelines under the Clean Air Act. Periodic sampling for lead content of gasoline at distribution outlets in the Northwest Territories will be conducted.

In 1979, it is expected that arsenic emission regulations for gold processors will be promulgated under the Clean Air Act.

Lead free gas compliance monitoring, NAPS stations and winter CO and NOX monitoring will continue. Implementation of air emission guidelines as territorial regulations, under the Public Health Ordinance for Arctic Mining and Asphalt Paving, along with some compliance monitoring and enforcement activities will likely occur. EPS will continue to provide technical advice and support of YTG and industry in a number of areas.

Water Pollution Control

Responsibilities

With the Department of Indian Affairs and Northern Development and the two territorial water boards, this body ensures development and implementation of adequate water pollution control programs in the North. It implements national effluent regulations and other water pollution abatement programs and stimulates the development and application of water pollution control technologies as they relate to the special problems of the North.

Review 1978-79

Four reports on past years work were published. They were: *Assessment of the Water Quality and Biological Conditions in watersheds surrounding the United Keno Hill Mines, Elsa, Yukon, During the Summers of 1974 and 1975*; *The Effects of the Abandoned Venus Mines Tailings Pond on the Aquatic Environment of Windy Arm, Tagish Lake, Yukon Territory*; *Compliance Evaluation of Cyprus Anvil Mine, Faro, Yukon Territory*; *Water Chemistry and Biological Conditions in the Water Shed Near Mount Nansen Mines Ltd., Yukon Territory*.

Water chemistry and biological surveys were conducted at Cyprus Anvil Mine, the Yukon River below Whitehorse sewage discharge, Lake Leberge and Old Crow.

Receiving water surveys were completed at the Thompson-Lundmark abandoned mine, Peter Baker Slough on Great Slave Lake, Yellowknife River Watershed and downstream lakes of the Con Mine. In addition, a toxicity study for DIAND on mine tailings was completed.

The NWT Water Board has provided technical assistance in the preparation of water licences and authorizations.

A quarterly water pollution control operators newsletter began publication in 1978.

Light Aircraft Camera System (LACS) was used for aerial photography on the Cyprus-Anvil and Lake Leberge surveys.

Compliance monitoring for the *Liquid Mine Effluent Guidelines* was conducted at Cyprus Anvil and United Keno Hill mines.

EPS participated in a monthly review of water quality monitoring reports from Cyprus Anvil and United Keno Hill mines supplied to DIAND as a condition of the water - use licences.

Plans for 1979-80

Water chemistry and biological surveys will be conducted at Cyprus Anvil and United Keno Hill mines and the abandoned Hudson Yukon mine. Monitoring of effluent discharges and a performance evaluation will be conducted at sewage lagoons throughout the Yukon. Compliance monitoring will continue at Yukon mines.

In 1979, receiving water surveys will be conducted on the Flat River near a tungsten mine; the Mackenzie River at Norman Wells; the watershed near an abandoned uranium mine; Great Bear Lake in the vicinity of Echo Bay Mines; and selected oil exploration sites in the Beaufort Sea.

Participation will continue with the APOA/Government Committee investigating water pollution concerns from offshore drilling.

EPS will chair a Water Board Working Group to develop guidelines for municipal water-use licensing in the Northwest Territories.

Federal Activities

Responsibilities

The Environmental Protection Service is responsible for cleaning up sources of pollution at federal facilities and ensuring that new projects are environmentally acceptable. The cleanup program is developed in consultation with other federal departments. Pollution problems are identified and assessed. An annual program is recommended to the Treasury Board for funds.

Environmental effects of new projects are assessed through a screening process. Assistance is provided to other departments through guidelines, codes of good practice and specific advice. Projects are monitored, as necessary.

Review 1978-79

All federal establishments with waste treatment facilities in the Northwest Territories were monitored to check compliance to federal guidelines.

Environmental assessment and design studies were completed on Frobisher Bay and Port Simpson airports.

Final reports were prepared on environmental control requirements at northern DEW line sites and HAWS.

EPS staff were scientific authority on a contract study of the assessment of past construction impacts of linear facilities on northern eco-systems.

In support of DIAND, EPS staff appointed Pollution Prevention Officers under the Arctic Waters Pollution Prevention Act. Periodic inspections were undertaken of offshore drilling activities in the Northwest Territories.

A Biological Oxygen Demand (BOD) survey was conducted at the Watson Lake Airport.

The septic tank system at the new Fraser Camp border crossing (US - Canada) was evaluated for Revenue Canada.

Plans for 1979-80

Activities formerly under Environmental Impact Control are now part of this program. EPS will continue to provide support to the RSCC and departmental task forces and EARP panels. Two major projects may be undertaken in the Yukon. They are an oil pipeline and a hydro-electric development. EPS will continue to be active with the Land Use Advisory Committee and will finalize *Recommendations Concerning the Design and Rehabilitation of Drilling Mud Sumps*.

An evaluation of the recommendations of the Watson Lake and Whitehorse airport assessments will be completed and discussions held with MOT regarding implementation. Evaluations will continue on the operation of pollution control measures at federal facilities.

Guidelines for northern sump construction and maintenance will be prepared to assist industry and regulatory authorities in the NWT and Yukon.

An offshore drilling documentary film is expected to be completed.

A National Workshop is planned in 1980 to study environmental issues related to offshore oil and gas production. Environmental assessment activity in the NWT is expected to continue at the same level as last year.

Environmental inspections of arctic offshore activities will continue at the same frequency as last year. The work will also deal with Davis Strait operations.

Environmental Emergencies

Responsibilities

EPS helps to develop contingency plans for spills of oil and other hazardous materials. This involves coordination of technology and advice on spill prevention. EPS alerts appropriate agencies; reports on environmental emergencies; ensures adequate cleanup measures are taken; and, where necessary, initiates cleanup.

Review 1978-79

More than 50 significant events were reported in the Northwest Territories during the year. Seven of these were investigated on site to ensure cleanup.

Upon the recommendation of the EARP Panel inquiry on offshore drilling in the Davis Strait, EPS drafted an oil spill contingency plan as a backup to industry measures. In addition, EPS staff assisted a number of firms in preparing site specific plans for spill prevention.

EPS, industry, GNWT and other government departments continued to prepare spill containment guidelines for northern petroleum storage facilities.

The Yukon office reported 21 significant events, of which 11 required site visits. As the result of a tailings ponds break at United Keno Hill Mines in Elsa, Yukon, the company was charged and fined \$10 000.

An inspection was made of the White Pass and Yukon Route 4 inch product line from Skagway to Whitehorse. This continues a program started two years ago. As a result of this study, the company has upgraded the pipeline. The upgrading program has dramatically reduced the number of spill incidents from this facility.

EPS chairs the Environmental Protection Sub-Committee of the Yukon Disaster Committee. Under the auspices of this committee, a government *Contingency Plan to Deal with Oil and Hazardous Chemical Spills* was published. Copies of the plan have been distributed to government agencies, major industrial and transportation companies and many smaller operations.

EPS Yukon participated in the Arctic Marine Oil Spill program as scientific authority for a shoreline protection and cleanup strategies study.

Plans for 1979-80

The service hopes to expand its prevention program to other industrial sectors. An update on the Contingency Plan will be undertaken and EPS Yukon will encourage industries to develop contingency specific plans. The reporting and response role in environmental emergencies will continue as will participation in the Arctic Marine Oil Spill Program.

There are tentative plans to conduct a series of experimental oil spills in the North after consultation with communities and interested groups.

Dispersant toxicity evaluations will be done in the summer on Beaufort Sea marine plankton and benthic organisms.

Ecological Impact Control

Responsibilities

The service drafts Initial Environmental Evaluation (IEE) guidelines for the Federal Environmental Assessment and Review Office (FEARO). It provides secretariat services to the Committee on Environmental Assessment and the Regional Screening and Co-ordinating Committees. EPS comments on projects under assessment and assists other government departments with the assessment process.

This program includes development of codes of good practice and the provision of technical advice to all levels of government and the private sector.

Review 1978-79

EPS Yukon staff were members of four panels: Alaska Highway Gas Pipeline, Shakwak Highway Project, Dempster Pipeline and South Yukon Transportation. As well staff members served on departmental task forces for all panels except the Dempster Pipeline Panel.

As a result of recommendations for the Shakwak Highway Project Panel, a Review Committee was set up to ensure that the panel's recommendations are carried out.

EPS was represented on the Land Use Advisory Committee and initiated two documents: *Solid Waste Disposal Guidelines for Small Communities in Yukon* (completed and distributed to the committee) and *Recommendations Concerning the Design and Rehabilitation of Drilling Mud Sumps* (in the review stage). A report was prepared by EPS for DPW entitled *Environmental Concerns and Recommendations - Alaska Highway Reconstruction and Maintenance, Kilometer 1 008-1 635*.

The Yukon office also participated in the Pacific Region RSCC reviews of major Yukon projects.

Plans for 1979-80

This program area is now part of the Federal Activities Program and the 1979-80 plans are included in the report on Federal Activities.

Waste Management

Responsibilities

EPS ensures federal government activities provide for waste disposal and the conservation of materials. New procedures and techniques for solid waste management are developed and information distributed.

Review 1978-79

EPS studied snow removal and disposal practices in Whitehorse and prepared a draft report. Discussions were held with the Water Board and City concerning the environmental implications of this activity. Groundwater investigations at Whitehorse municipal landfill were conducted. Discussions were held with the territorial government concerning solid waste disposal at recreational development areas. An inventory of hazardous wastes and used oil was conducted and preliminary data evaluated. EPS continued to maintain an interim storage facility for other government departments who have unused or waste hazardous materials. EPS coordinated the disposal of some non-persistent type pesticides that were remnants of a territorial government mosquito control program. EPS Yukon represented the territorial government on a steering committee to determine the feasibility of building an ultimate disposal facility for hazardous materials in western Canada. EPS Yukon

attended several federal/provincial meetings on waste management and participated in a training seminar on waste management for territorial employees.

Under contract, studies in waste paper recycling in Yellowknife and waste oil recovery in the NWT were completed.

A waste management educational slide/cassette kit entitled *You Can Do Better* has been prepared and kits distributed to GNWT and NHW staff.

Plans for 1979-80

A joint federal/provincial/territorial study in establishing a regional hazardous waste treatment facility is under way. In the NWT, EPS is planning to establish an interim hazardous waste storage depot prior to trans-shipment to a southern facility.

EPS will continue to manage the interim hazardous waste storage facility and encourage YTG to take a more active role in the collecting and transportation aspects of this problem. EPS will continue to advise other government agencies, municipalities, communities, and committees on waste management matters. The service will implement recommendations from the hazardous waste and used oil inventory. EPS will look into the reuse of used oil with Whitehorse and the Department of Public Works. The use of synthetic fibres in asphalt paving will also be studied. EPS plans to assess the feasibility of a collection and marketing system for ferrous scrap.

Environmental Contaminants

Review 1978-79

Labelling all PCB containing equipment began in the NWT as required by the Environmental Contaminants Act.

A field survey to determine residual herbicide contaminant at navigation aid sites on the Mackenzie River was completed.

EPS coordinated the Yukon survey for polychlorinated biphenyls (PCBs) ensuring that labelling of electrical equipment containing PCBs had occurred. The territory determined the need for a questionnaire for manufacturers and suppliers of mercury. The survey indicated no questionnaire is required.

EPS reviewed the territorial government's Mosquito Control Program and provided advice to alleviate some of the environmental concerns. EPS also monitored spraying programs in Whitehorse and several smaller communities.

Plans for 1979-80

EPS plans to continue its participation with YTG in the Mosquito Control Program. EPS expects to be involved with the transport of PCB containing materials out of the territory.

The service will continue to provide technical advice on the use of biocides and identification of toxic substance problems in the NWT to all interested agencies and public.

Ocean Dumping Control

Responsibilities

Regulations of deliberate ocean disposal of materials from ships, aircraft and platforms operating in Canada's territorial or inland waters are a responsibility of the service. In 1977, EPS began administering the provisions of the Act which regulates the loading and disposal of wastes at sea.

Review 1978-79

EPS reviewed the applications by Canmar for coal and salt dusting experiments at Pauline Cove, Herschel Island. The application was approved and subsequently inspected to determine environmental consequences. Seven northern applications were processed and four permits issued. This program is now under the Water Pollution Control Directorate.

Northern Technology Unit

Responsibilities

The Northern Technology Unit (NTU) in Edmonton develops and demonstrates pollution abatement technology for northern Canada.

Review 1978-79

NTU completed review of alternative waste management technologies for the proposed Alaska Highway Gas Pipeline. Field projects on treatment of dilute, cold wastewater by screening, rotating biological contactor treatment and ozone disinfection were completed in Whitehorse. The NTU-initiated USA-Canada Steering Committee published a design manual on cold climate utility systems. NTU co-sponsored with the University of Alberta a second symposium on utilities delivery in northern regions. NTU continued its on-going review of the northern environmental engineering literature with publication of a second annotated bibliography for 1976-77.

NTU participated in the joint Canada-USA workshop on northern civil engineering research needs. Technical assistance was provided to various government and non-government groups.

Plans for 1979-80

Cooperative projects with the Government of the Northwest Territories on a computer-assisted methodology to aid in the planning of NWT on water and sanitation services and a detailed study of water conservation methods and energy savings will be completed. A critical evaluation of northern wastewater lagoons will be undertaken. Studies will be conducted in the Yukon on water bleeding reduction and on instrumentation and analysis of buried water and sewer pipes in sensitive, ice-rich permafrost.

Science Advisor

Responsibilities

The Science Advisor provides advice on science-related policies and evaluates scientific activities of the department. The office studies the need and adequacy of scientific and technical information on the environment and the use of renewable resources in the industrial and social activities of Canadians. It explores and develops techniques for obtaining scientific knowledge of the environment and indicates possible consequences of changes and influences in the Canadian and world environment. Where appropriate, the science advisor provides liaison and contact between scientific activities of the department and those of other agencies.

Review 1978-79

A considerable part of the work of the Office of the Science Advisor relates to northern issues. In 1978-79 the office provided coordination of Canadian interests in multi-national research programs in polar regions in marine-atmosphere heat exchange, ice dynamics, geophysics, arctic tectonics and environmental changes. It contributed to reviews of the state of environmental information in the North and to information and appraisal of the effect on the environment of energy activities in northern Canada and Alaska.

Federal Environment Assessment Review Office

Responsibilities

The decision to institute a federal environmental impact assessment policy was made by Cabinet on December 20, 1973. The Minister of the Environment was directed to establish, in cooperation with other Ministers, a process for the environmental impact assessment of federal projects, programs and activities. This process is called the federal Environmental Assessment and Review Process (EARP).

EARP was established to assess the environmental consequences of federal programs, projects and activities before final decisions are made and to incorporate the results of these assessments in planning, decision-making and implementation.

All federal departments and agencies are subject to EARP except proprietary crown corporations and regulatory agencies which are invited to participate in the process. Federal projects are considered to be those that are initiated by federal departments and agencies, those for which federal funds are solicited, and those involving federal property.

EARP is administered by the Federal Environmental Assessment Review Office (FEARO) which reports to the Minister of the Environment on the functioning of the process.

In accordance with the process, departments and agencies make initial screenings of their own activities to identify their environmental effects. Participating agencies are required to inform the public early in the planning stage of those activities that may be environmentally sensitive.

Projects with potentially significant adverse environmental impacts are referred to the executive chairman of FEARO for a formal assessment. Each project submitted is reviewed by a separate independent panel.

The panel develops site-specific guidelines for the preparation of an Environmental Impact Statement (EIS). Preparation of the statement itself is the responsibility of the initiating federal department or agency. After studying the EIS, obtaining public response to this statement and receiving any additional advice considered necessary, the panel submits a report to the Minister of the Environment. This report includes an examination of the major impacts of the project and recommendations concerning the project's implementation. The project may not proceed before the panel has presented its recommendations.

Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department. If the Ministers agree to accept the recommendations, the appropriate organizations are instructed to implement them. The decision may also identify the federal departments or agencies responsible for any surveillance and monitoring needed, if this has not been detailed in the panel report.

The objectives of FEARO are: to develop and implement procedures, guidelines and administrative references to facilitate process operation; to ensure that all projects submitted to Environmental Assessment Panels receive competent reviews; and to evaluate the performance of the process and recommend appropriate changes.

Review 1978-79

The Shakwak Project (Haines Road/Alaska Highway) was referred to FEARO for panel review from the Department of Public Works. The proponent was the US Highways Administration. The project deals with a plan to reconstruct and pave the portion of the Alaska Highway from the Alaska/Yukon border to Haines Junction in Canada, and the Haines cut-off road from Haines Junction to the B.C./Alaska border.

Panel guidelines were issued, and the EIS submitted on January 3, 1978. The document was widely distributed for public and government review in Canada. Public meetings were held by the panel in Whitehorse and communities along the project corridor in March, 1978. The panel submitted its report to the Minister of the Environment in June, 1978. The panel concluded that it will be possible to carry out the project without significant adverse environmental or social impacts if appropriate procedures are followed and certain conditions met. The Minister accepted the panel's recommendations.

The Eastern Arctic Offshore Drilling - South Davis Strait Project was referred to FEARO for review in July, 1977, by DIAND. The project involves exploration for hydrocarbons off the southeast coast of Baffin Island. The EIS and supporting documentation was submitted in June, 1978, by DIAND for review. The panel secretariat distributed copies of the EIS and supporting documentation to technical agencies and public interest groups for comment. Copies of an Inuktitut translation of the EIS summary were distributed to communities in the immediate area of the proposed project. In September, 1978, the panel held meetings with the public in these communities to hear the views of the local residents. The panel's report was submitted to the Minister on November 1, 1979. The panel recommended that the project proceed, but that both industry and government prepare adequate contingency plans and carry out other measures relating to improved response capability and liability and compensation, in the event of a spill. The Minister accepted the panel's recommendations.

The Lancaster Sound Drilling Project was referred to FEARO for panel review in July, 1977, by DIAND. It involved offshore drilling in Lancaster Sound by Norlands Petroleum. The EIS and supporting documentation was received in July, 1978, and distributed by the panel secretariat to technical reviewers and the concerned communities. The panel held community meetings in October-November, 1978, to hear the views of the local residents about the project and submitted its report to the Minister in February, 1979. The panel recommended that drilling be deferred until the government assesses the best uses of Lancaster Sound and until adequate preparations for a potential blowout have been developed. The Minister of the Environment accepted the panel's recommendations.

Plans for 1979-80

There are seven panel projects at various stages of review north of 60°.

The Alaska Highway Pipeline was referred to FEARO by DIAND for a formal panel review in March, 1977. The project consists of construction and operation by Foothills Pipelines (Yukon) Ltd., of a buried gas transmission line through the southern sector of the Yukon Territory to transport Alaskan gas to the United States. The Minister of the Environment instructed the panel to review existing data, seek public and professional opinion and prepare an interim report. After holding public meetings, the panel delivered its report July 27, 1977, which outlines major environmental issues and identifies major data deficiencies. Although the panel concluded the proposed pipeline could be constructed in an environmentally acceptable manner, it recommended that the EIS for the proposed Yukon route be based on guidelines issued by the panel. The governments of Canada and the US agreed in September, 1977, to use the Alaska Highway route to move Alaskan gas. The Guidelines for a detailed EIS were issued in December, 1977.

The EIS was prepared by the proponent and distributed for public and technical review in January, 1979. Public meetings were held in Yukon communities, including Whitehorse, in March and April, 1979. The panel concluded (on April 28, 1979,) that the proponent had not provided sufficient information on certain aspects of the project to enable the panel to complete its review at that time. The panel will prepare a report in June, 1979, which will request that the proponent complete its assessment of the project. Once this is done, the panel will reconvene the technical meetings in public.

The Arctic Pilot Project was referred for panel review by Petro-Canada and DIAND in November, 1977. The project involves piping gas from the Drake Point field, across Melville Island to Bridport Inlet, where it would be liquified. The project also includes the construction of a harbor capable for year-round operation for LNG carriers designed to travel between Melville Island and a southern east coast terminal. The Environmental Impact Statement was received from Petro-Canada in February, 1979. Following receipt of technical comments, the panel will issue guidelines for the completion of the environmental assessment. Public review will take place after the EIS has been completed by the proponent.

The Dempster Pipeline Project was referred for panel review by DIAND in January, 1978. The project involves construction and operation of a gas pipeline by Foothills Pipelines for the transmission of Mackenzie Delta gas to a point near Whitehorse, where it would link up with the projected Alaska Highway Gas Pipeline. Formal guidelines for the preparation for an EIS have been issued.

In January, 1975, DIAND referred for a formal panel review the Mackenzie Delta Gas Gathering System Project. The project involves the construction and operation of three gas processing plants in the Mackenzie Delta and transportation facilities to supply a Dempster pipeline. In the summer of 1977, these three projects were suspended. However, an EIS for one of the plants (Taglu) will be prepared for review. An overview will also be submitted to consider the description and mitigation of gas processing plant and pipeline impacts. The panel will make arrangements for a technical and public review on the Taglu EIS after which a report to the Minister will be prepared.

DIAND referred the Eastern Arctic Offshore Drilling - North Cape Dyer Project for panel review, in July, 1977. The project is located in the waters of the northeastern coast of Baffin Island. An EIS is presently being prepared by Petro-Canada. When the EIS is received it will be distributed to the public and technical agencies for comments, followed by public meetings.

The eastern Yukon transportation study was referred for panel review in October, 1976, by the Department of Transport. The panel was formed in December, 1977. The project involves improvement of transportation systems in the Yukon. Guidelines to assist in the environmental analysis of alternatives have been prepared by the panel and issued to the Department of Transport. These are available to the public. When the Department of Transport has completed the evaluation of options and is ready to concentrate study on a specific proposal, the panel will decide what further environmental requirements may be necessary.

The co-initiators for the Polar Gas Project are DIAND (north of 60°) and EMR south of 60°). The project was referred for a panel review in November, 1975. A Federal Government Task Force developed guidelines for the EIS. The panel was formed in March, 1976. The project includes the extraction and purification of gas from fields in the high arctic, and construction of a large diameter pipeline for natural gas transmission through the Northwest Territories and one or more provinces to a junction with an existing pipeline in southern Canada. The guidelines for the preparation of an Environmental Impact Statement have been finalized by the panel and issued to the initiators for distribution to the proponents. The EIS has been prepared and distributed to the panel. Copies of the EIS have also been distributed to technical review agencies and the public.

Planning and Finance Service

The Planning and Finance Service (PFS) provides a variety of support facilities for Fisheries and Environment Canada including computing management services and personnel. One of its directorates has direct relevance to the North.

Liaison and Coordination Directorate

Responsibilities

This directorate coordinates environmental and renewable resource activities involving other federal departments, provincial governments, governments of other countries and international organizations. The directorate's activities are generally national or international in scope but some are related directly to the North, particularly in assisting services representing FEC on various committees of the ACND. There are also northern aspects to a number of environmental issues raised in bilateral and international discussions, including activities which involve the United States.■

The Department of External Affairs activities in the North involve the operations of foreign governments and their agencies. The department is a member of the Advisory Committee on Northern Development (ACND) and of several sub-committees. It advises on matters having foreign policy implications, maintains a coordination and operational role in matters of international law and policy relating to the arctic and negotiates agreements with other countries proposing activities in the North.

Within the Department of External Affairs a number of divisions handle different aspects of arctic matters.

Science, Environment and Transportation Policy Division (EBS) coordinates Canadian policy on scientific activities of foreign governments or their agencies in the Canadian arctic. It also provides advice to the ACND on international policy aspects of scientific conferences, exchanges and agreements. The division is a focal point for interdepartmental consideration of requests by foreign interests to conduct scientific activities in the Canadian North. This committee also coordinates departmental responsibilities in transportation matters, including international policy aspects of arctic civil aviation and arctic shipping. EBS coordinates information gathering on external developments pertaining to arctic transportation technology and plays an active role in discussions on environmental issues in the OECD and UNEP.

Industry, Investment and Competition Policy Division (EBI) monitors foreign economic interests in the North. Of particular interest are potential investments, the extraction of northern minerals by foreign interests and the compatibility of these with Canada's domestic and foreign policy objectives. EBI is also concerned with obtaining maximum industrial benefits for Canada from northern resource development.

The Commodity and Energy Policy Division (ECW) coordinates activities on the international aspects of the development of large energy projects in the arctic. In 1978 this involved contacts with foreign countries interested in the commercial and environmental implications of the Arctic Pilot Project, a proposal to produce and ship liquified natural gas (LNG) from Melville Island to markets in eastern North America or Europe. The division is involved with proposals for participation by other countries in the exploration and development of oil and gas reserves in the Beaufort Sea as well as the arctic islands.

The Legal Operations Division (FLO) handles and ensures that arctic activities and programs are consistent with existing and evolving principles of international law. For example, FLO oversees the application of Canada's rights and duties as contained in the 1958 Convention on the Continental Shelf. In consultation with departments and agencies having specific responsibility for surveillance of coastal waters and for enforcement activities, FLO is concerned with transit uses of Canadian arctic waters. FLO coordinates Canadian action taken internationally to prevent ocean pollution as set out in the 1970 Arctic Waters Pollution Prevention Act. During 1978, the division coordinated discussions between Canadian and Danish authorities relating to resource development and marine environment in the eastern Canadian arctic and west Greenland. Discussions specifically related to liability and compensation in the event of trans-frontier pollution. Cooperative arrangements for the prevention and clean-up of marine pollution, including the 1977 Interim Canada-Denmark Oil Spill Contingency Plan, were also discussed.

FLO has concentrated on the United Nations Law of the Sea Conference. It has worked to have the conference recognize the special rights and responsibilities of coastal states to set standards for the prevention of pollution from ships operating in arctic ice-infested waters.

The Bureau of United States Affairs (GNP) coordinates Canada-United States relations in the arctic. The Transboundary Relations Division of this Bureau (GNT) coordinates bilateral energy, environmental and transportation questions, particularly along the 1 600 km Alaskan border. It is responsible for the foreign policy aspects of northern pipelines, which include monitoring United States activities regarding the Alaska Highway gas pipeline, and the termination of the Haines-Fairbanks Pipeline Agreement of 1953. There have been consultations with the United States on exploratory oil and gas drilling in the Beaufort Sea, over which US authorities have expressed environmental concerns. GNT is concerned with a series of environmental questions such as migratory birds, the protection of the Porcupine Caribou herd, and bilateral cooperation in creating and managing parks and historic sites, designating and managing wild rivers. In January 1979, the US Secretary of the Interior visited Ottawa to discuss these questions with the Ministers of Indian Affairs and Northern Development and of Environment Canada. GNT monitors the legislation before the US Congress on Alaska National Interest (D-2) Lands to monitor possible impact on Canadian interests. In transportation, it has been responsible for coordination of foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak project).

The European Bureau has general relations with the Nordic countries (Europe II and III Divisions) and the USSR (Europe I Division). Europe II Division - Denmark (Greenland) - and Europe III Division - Norway, Sweden, Finland and Iceland - handle many of the exchanges and activities between Canada and the Nordic countries on issues related to the North. Europe III Division heads the Circumpolar Affairs Panel set up by External Affairs in April 1979 to promote greater coordination on northern foreign policy questions. Europe I participated in the political consultations with the USSR Deputy Foreign Minister April 24-25, 1979, during which northern development was discussed.

The Department of External Affairs works with scientists, senior foreign editors or other media personnel and foreign government officials who wish to tour the arctic. Activities that encourage an interchange of ideas on problems peculiar to all arctic areas come under the department as well.

The Bureau of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the arctic for approximately 25 heads of diplomatic missions accredited to Canada. Thus, each head of a diplomatic mission is assured of an opportunity to visit the arctic during his tour of duty in Canada.

The External Information Programs Division (FIA) takes an active interest in the people and concerns of the Canadian North. FIA's information programs are carried out around the world. FIA provides Canadian diplomatic missions with up-to-date material on developments in the North, pertinent news releases from other government departments and agencies, background publications, and response sheets on the Inuit and Indians. Much of the information is aimed at key opinion makers such as foreign journalists, government officials and parliamentarians, academics and businessmen.

FIA's Circumpolar Exhibit, now touring Austria, portrays life in the North and the impact of advanced technology on the northern environment. The Vienna Museum of Natural History is circulating the exhibit and has offered it a permanent home. Films on the North are sent to Canadian missions. Last year film prints on Indian handicrafts (produced by North American Films Ltd.) and oil drilling in the arctic ("Objective Energy", sponsored by Imperial Oil) were widely distributed.

The division's Canada Weekly, published in three languages, details news events of the North. Photosheets, printed in nine languages, offer a visual impression of the North's geography, history, economy, culture and population. More detailed information is given in the Reference Papers series. Specific papers are devoted to the Inuit, Indians and northern transportation. FIA normally sponsors or facilitates visits of foreign journalists and film crews to the North. In 1978 the division made arrangements for a Japanese television team's travel to Churchill and Rankin Inlet.

The Division of Cultural Affairs (FAC) is responsible for travelling collections of Canadian art, including three of Inuit prints.

Recently, to facilitate travel by persons residing in remote northern areas, the Department of External Affairs' Passport Office (FPO) prepared a passport information sheet. Supplies for distribution were sent to the Northern Operations Branch, Department of Indian Affairs and Northern Development in the Yukon. The pamphlet provides directions on how to apply for a passport and directs attention to the services provided by the regional passport offices across the country. It also details the procedures to follow in the event of an emergency travel situation.

The Canadian Government scholarship program with the Peoples Republic of China was publicized in the Yukon and Northwest Territories by Academic Relations Division (FAR). One candidate from the territories was in the most recent competition. The Association of Universities and Colleges in Canada informs the territories of the scholarship programs they administer on behalf of External Affairs.

The Department of Education in each territory was informed of new proposals for the German Foreign Cultural Policy in the secondary school sector. The departments were asked to provide information on education in their jurisdictions which might be useful to External Affairs. The department will obtain information on education, either in Canada or abroad, as required by the territories.

Several information services are being extended to the two territories. A tabloid (on Canada-US-relations), and a Commonwealth Day poster and "teacher's guide" were distributed to schools in the North.

The department "Consular Awareness" program distributes the travel advice booklet "Bon Voyage, but..." in the North. ■

Responsibilities

The department is responsible for fisheries research and management throughout the Canadian North, drawing its authority from several acts, including the significant Fisheries Act. The department implements oceanographic and hydrographic programs and coordinates oceans policies and programs of the federal government.

In detail, the work includes conservation, protection, management and enhancement of fish and marine mammal stocks, protection of fish habitats, upgrading commercial fishing practices and inspection of processing plants, assessing inventories and characteristics of angling stocks, physical and chemical studies of the arctic marine environment.

Fisheries Resources

Review 1978-79

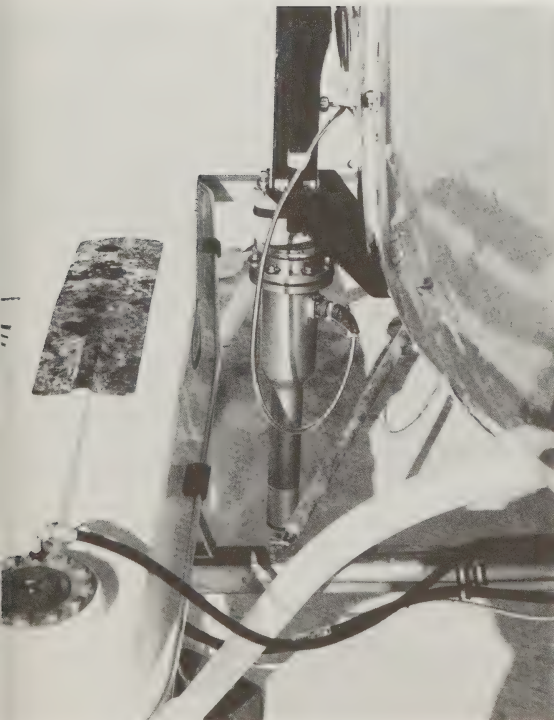
Research into the biology and ecology of Arctic Char continued with investigations centred at Nauyuk Lake, on the Kent Peninsula, Northwest Territories. The work will provide details on population, production capacity, history and ecological adaptation of Arctic Char, a species important to the domestic, sport and commercial fisheries of NWT. This information will help in planning strategies and improve management techniques.

Activities in fishery management included creel census, biological sampling and tagging studies on lake trout in Great Bear and Great Slave lakes. As a result of stock assessment and monitoring studies since 1971, catch and possession limits were lowered on Lake Trout. In addition, results from studies brought about reduced catch and possession limits for Arctic Grayling and Northern Pike in the Beaver Lake area near the Mackenzie River mouth. Monitoring of the sport fisheries continued for Arctic Char at Tree River, Walleye on Mosquito Creek and Hay River, and Arctic Grayling on the Kakisa River. This information will determine future catch and possession limits.

Monitoring of commercial fishing on Great Slave Lake continued as the effects of a reduced gillnet mesh size were observed on whitefish populations. Studies on age, growth and movement patterns of Inconnu were continued in Great Slave Lake and Buffalo River. An experimental gill netting program with primary emphasis on Walleye was carried out in Kakisa Lake.

Monitoring of the Arctic Char commercial fishing in the Cambridge Bay area checked catch, age, and growth of populations. Discussions with settlement councils and hunters and trappers associations in the central arctic (Gjoa Haven, Pelly Bay and Spence Bay) considered the proposed commercial fishery. The test fishery program, in conjunction with the Northwest Territories government officers, was expanded, especially in the Baffin Island area. All these programs generate information needed to set commercial fishing quotas.

These studies on Arctic Char, in particular those in the central arctic, complement research work on the Kent Peninsula.



This helicopter-mounted hydraulically-operated ram transducer for an echo sounder is used by the Canadian Hydrographic Service for surveying in the North.

Plans for 1979-80

Investigations on the effects of the reduced catch and possession limits for lake trout sport fisheries in Great Bear and Great Slave lakes will be carried out. In addition, sport fisheries will be monitored in Hay River, Yellowknife and Keewatin areas. The creel census and tagging study for Arctic Char at Tree River will continue. A voluntary creel census program will be attempted at several sport fishing lodges.

Assessment of the effects of commercial fishing on Great Slave Lake will continue. Whitefish populations will be monitored to assess the effects of mesh size reduction. In addition, a tagging and biochemical genetic study will differentiate between sub-populations and/or populations of Whitefish. An experimental netting study is to be done on Tathlina Lake and the Inconnu study on Great Slave-Buffero River will continue. Assessment of char populations and monitoring of commercial fishing in Cambridge Bay will continue. Plans are also being made to monitor the domestic and/or commercial char fishing at Rankin Inlet, Frobisher Bay (Nettilling Lake), Paulatuk and the Aklavik-Fort McPherson areas. A two-year preliminary assessment study on Arctic Char in the Gjoa Haven-Pelly Bay area will be initiated in conjunction with the NWT Government. The Arctic Char project on the Kent Peninsula will continue next year.

Environmental Impact Section

Review 1978-79

Arctic Land Use mapping surveys were completed for Kazan uplands area. A report describing the survey techniques, the characteristics of the watersheds and detailed catch information was prepared.

A study was initiated on four streams to be crossed by the Liard Highway. It is intended to document the effects of the crossings on hydrological conditions, fish habitats and the effectiveness of the crossing designs on fish migrations.

Field work began on the Mackenzie Delta-Beaufort Sea Study to obtain information for evaluating proposed industrial developments. Preliminary data were along the Tuktoyaktuk Peninsula on fish movements, utilization of freshwater systems and various habitat classification parameters.

The effects of the Liard Highway crossing on the fish of the Poplar River were investigated. The study indicated that spawning migrations were totally blocked by culvert flows and that the Arctic Grayling population reduced to a dangerously low level. Access to upstream spawning areas was recommended if the population and sport fishing are to be maintained.

Fisheries investigations of the Slave River Delta were initiated to determine the significance to area resources and the potential for disruption through water quality or quantity changes.

Field activities at Saqvaquac provided information on swimming abilities of Arctic Char. This can be used in designing future facilities for char passage. The methane study, designed to predict the effects of a natural gas pipeline break beneath river or lake ice, was successfully completed. Results indicated very low rates of methane oxidation.

Plans for 1979-80

The Arctic Land Use mapping surveys will continue, focusing on the Wager Lowlands area.

The Liard Highway culvert study will examine post-construction effects. At least two years of monitoring are anticipated.

Work will continue on the Mackenzie Delta-Beaufort Sea project. A comparative limnological study of area lakes being utilized for summer feeding and overwintering purposes is planned.

Studies of the Slave River Delta will expand to work on macronutrients and an evaluation of the spawning potential of river reaches above the Delta.

At Saqvaquac, phosphorus and nitrogen will be added to selected lakes to determine if arctic systems fix and accumulate nutrients as in southerly systems. The effects on nutrient budgets, primary production, benthos, zoo plankton and fish will be monitored.

Industry Services Branch

Responsibilities

The branch monitors processing plants to ensure regulatory requirements for construction, equipment and operating standards are met. It provides advice in handling, processing, transportation, storage and distribution of fish products; performs laboratory analyses for bacteriological and chemical contaminants in domestic and imported fish products, water and ice samples; inspects freshwater species, and fishing vessels; administers grant assistance to fishermen for new vessels or modification of existing ones and the fishing vessel insurance coverage program. It also administers ice making or ice storage facilities under National Ice Harvest Programs and the National Fish Chilling Assistance Plan; provides advice and guidance to industry on programs that promote development and application of practical uses in such fields as vessel gear, equipment and process development to improve quality of landed poundage.

Review 1978-79

The monitoring of certified processing plants ensured that construction and operating requirements were maintained. Advice and guidance was provided to packing plant operators to upgrade their operating procedures.

Collection of end-of-line samples for analysis and in-plant surveys and inspection were continued. A study of contaminants in approximately 1 000 samples from various locations in the Northwest Territories was completed and an interim data report prepared.

The Fishing Vessel Insurance Plan now provides low cost insurance to 45 out of 120 commercial fishing vessels in the Northwest Territories. Three NWT vessels were approved for assistance.

The development of Whitefish roe harvesting and processing was continued. An expansion of harvesting and processing in new locations was undertaken in the Western Region, including the Northwest Territories. In excess of 4 t of cured eggs, were produced and exported to the Japanese market.

An automated lift gate system for controlled release of pond reared Walleye was installed at Pacheta Lake near Duck Bay on Lake Winnipegosis.

Testing of a mobile fish plant continued in two Saskatchewan areas and an experimental 22 foot aluminum fishing vessel, designed and built in 1976, was demonstrated in the Northwest Territories.

Automated winter fishing equipment was designed, built, and tested in Northern Manitoba. The equipment was intended to improve working conditions, increase productivity, and improve fish quality. Preliminary reports indicate that this project was well received by fishermen.

Plans for 1979-80

The branch will continue to carry out regulatory inspection of fish products, processing plants, vessels and transport.

Further supervised expansion of Whitefish roe harvesting and processing is planned, to increase volumes, improve efficiency of production and processing and expand into new locations.

Initial favourable response to samples of salt-cured whole Northern Pike ovaries, shipped to several Japanese brokers for market assessment, will result in an experimental program to produce and process limited volumes.

Vessel, gear, and plant modification studies will continue. The mobile plant will complete its testing schedule and the automated winter fishing gear will be modified and demonstrated in northern areas.

A small scale fish fertilizer plant will be introduced. The offal produced during heading and gutting operations will be the raw material source for the fertilizer plant.

An electric pair seine will be modified to facilitate the live harvesting of both Rainbow Trout from aquaculture ponds and Walleye from densely stocked large rearing ponds.

An improved version of the lift gate system for the Wall-eye rearing program has been constructed. The new system employs a hydraulic operating system with solid-state controls and timing circuits. It will be installed on a large culvert at Salt Point on Lake Winnipegosis. The operation will be monitored and evaluated through the summer of 1979.

Conservation and Protection

Review 1978-79

Fishery officers conducted surveillance and monitoring patrols in: Great Slave Lake, where 1.5 million kg of trout and Whitefish were commercially fished; Cambridge Bay where 79 000 kg of Arctic Char were harvested commercially; Yellowknife and Hay River, where roadside sport fishing was monitored; sport fishing lodges throughout the territories; the Mackenzie Delta, where the domestic and commercial fishing was monitored as well as the domestic Beluga Whale hunt. Surveillance was also done in areas of highway construction and industrial development.

Inspection officers ensured application of national standards in the handling and processing of freshwater fish. They also administered the fishing vessel insurance plan, fishing vessel assistance plan, vessel certification program, and fish chilling assistance program.

A new sub-district office was opened on Baffin Island to provide better service to the eastern arctic.



The Department of Fisheries and Oceans' most northerly research base is at Saqvaquac, 50 km north of Chesterfield Inlet, NWT.

Plans for 1979-80

The conservation and protection programs will continue. The new Baffin sub-district office will enhance the monitoring of the domestic Narwhal and Beluga Whale hunts.

Arctic Biological Station

Responsibilities

The station does biological investigations of the marine environment in Canada's North with emphasis on the distribution and abundance of marine mammals and fishes, the ecological factors that control production and the reaction of plants and animals to environmental stress.

Review 1978-79

Aerial surveys of White Whales were made in Cumberland Sound, southeast Baffin Island, as part of a re-assessment. The situation was reviewed with the local Inuit at a meeting of the Hunters and Trappers Association in Pangnirtung. In the western arctic aerial observations on Bowhead Whales were carried out.

Studies on the distribution, abundance and behaviour of marine mammals, particularly the Ringed Seal, were carried out in southeast Baffin Island from May to October.

Studies on the behaviour of walrus on Coats Island in northern Hudson Bay had to be abandoned owing to continual harassment by Polar Bears.

Seasonal bacterial observations were made in upper Frobisher Bay. At the same place studies continued on baseline levels of primary productivity, the distribution and abundance of phytoplankton and seaweed, growth rates of marine plants, and effects of crude oils and heavy metals on phytoplankton. Studies were begun on zooplankton feeding and on the distribution, population structure, reproduction and biochemical properties of key macrozooplankton.

Involvement in the EAMES program was continued from two cruises operated in Davis Strait and from the M.V. Calanus as a platform for environmental impact studies along the coast of southeast Baffin Island. Much use was also made of the facilities of the new Ikaluit Research Laboratory at Frobisher Bay.

Plans for 1978-79

Surveys of migrating marine mammals, particularly the Nar-whal, will be carried out in Lancaster Sound. Personnel of LGL Ltd., the environmental consultants, will aid in this project. The aerial surveys will be supported by more detailed observations of the inshore migration from a camp on the high vantage point of Cape Hay, northern Bylot Island.

Similar surveys, though on a much reduced scale, will be made of the White Whale population in Cumberland Sound. Visual and photographic counts will be made from the air.

Further collections of Ringed Seal specimens will be obtained from Holman Island as part of a long-term study of seal populations in the Beaufort Sea and Amundsen Gulf.

In Frobisher Bay, studies will continue on the seasonal distribution and abundance of bacteria, production and growth of phytoplankton and seaweeds, and the population structure, calorific and biochemical features of macrozooplankton.

Planned EAMES studies include participation by microbiological staff in collecting at a proposed drill-rig site in southern Davis Strait and in an oceanographic cruise in Baffin Bay. A marine ecological study will also be conducted at Brevoort Island, east Baffin Island, which the oil drilling companies will use as a logistics centre for offshore drilling.

Ocean and Aquatic Sciences

Responsibilities

Oceanographic and hydrographic programs contributing to management and development of ocean resources, as well as programs contributing to the understanding of ecological processes within the aquatic and marine environment, are carried out. Studies are aimed at determining the precautions and remedies required to restore and protect the environment and resources. Most operations are directed from regional headquarters at Patricia Bay, B.C., Dartmouth, N.S. and Burlington, Ontario.

Atlantic Region

Review 1978-79

A study of existing data was undertaken to establish the current field and the composition of water along the coast of Baffin Island, Davis Strait, and the Labrador Coast. Satellite pictures are used to determine ice movement and speed of the surface layer and STD data for the past 40 years were reviewed to determine the composition of the surface water.

Deep convection in the Labrador Sea and the nature of the Labrador Current were studied. Deep moorings are in place on Hamilton Bank to measure seasonal and yearly variations in the flow and the temperature and salinity fields of the Labrador Current. The work is part of a long-term scheme aimed at gaining an understanding of the Labrador Sea.

During the period March-April, 1979, the region participated with Ocean and Aquatic Sciences, Pacific Region and the Atmospheric Environment Service in a polynya heat flux experiment north of Dundas Island. The object of the experiment was to investigate the total heat budget of the system to explain the existence of the polynya and derive information on open water areas in the arctic.

The CSS HUDSON cruised to Scott Inlet, Buchan Gulf, the entrance to Lancaster Sound, and the North Water area in August-September, 1978. Programs were undertaken in chemistry, primary-productivity and environmental physiology. The chemistry program focussed on the fate of oil from the natural seep at Scott Inlet and the exploration of other potential seep

sites on the Baffin Island Shelf and in northern Baffin Bay. Primary productivity experiments were run to assess the production, growth and chemical composition of phytoplankton in cold-water environments. The environmental physiology work will determine the effects of petroleum on arctic marine systems. Ninety-five stations were occupied during the cruise.

Particular attention has been paid to the nutrient characteristics of the various outflows from the Arctic Ocean. It appears that the influence of silicate-rich water, entering the Arctic Ocean from the Bering Sea, decreases in an easterly direction so that the silicate content of the outflowing water decreases markedly between Jones Sound and Nares Strait.

Preparations continued towards a positioning system for the Lomonosov Ridge Experiment in 1979-80. This experiment, undertaken near the North Pole to study the nature of this undersea ridge, includes manned stations on drifting pack ice. The positioning work is directly relevant to the development of improved high arctic navigation at sea.

Plans for 1979-80

Most of the work described is on-going and will continue during 1979-80 including the analysis and interpretation of data collected during earlier field work.

Physical oceanographic studies will commence of fjord-related problems in northern Baffin Bay.

The region will verify physical oceanographic data gathered during the EAMES programs, archiving the CTD (Conductivity-Temperature-Depth) and current meter data and coordinating the archiving with Marine Environment Data Service.

Research on waves will include the extension of the wave climate data for the North Atlantic and examination of the Davis Strait region.

Planning will be undertaken for a further joint polynya heat flux experiment during the period March-April, 1980.

Work will concentrate on the analysis and interpretation of nutrient, trace metal and petroleum hydrocarbon data from the eastern arctic.

Planning will get under way for a major chemical oceanography cruise to Hudson Strait in 1980-81.

Research on the physiology and photosynthesis in cold water phytoplankton populations will require a cruise to Ungava Bay during July-September, 1979.

Pacific Region

Review 1978-79

Field activities of the Frozen Sea Research Group were concentrated in the Queen Elizabeth Islands from Bridport Inlet, Melville Island, eastward to the channels surrounding Cornwallis Island.

Recovery of current meters from Crozier Strait, between Cornwallis and Bathurst Islands, marked the end of a cooperative program with Polar Gas. Subsequent analysis showed that residual currents in Crozier Strait are southerly and about 10 times more vigorous in mid-winter than in mid-summer.

Four current-meter mooring systems were installed through sea ice over the Wellington Channel Sill, east of Cornwallis Island, in the spring, 1978. Meters buoyed upward from the Sill were oriented acoustically — providing the first field test of a new sonic orientation system developed for use in regions of weak horizontal magnetic field. The ice-suspended meters were recovered in July. Because 1978 was a 'heavy' ice-year sill mounted meters could not be safely recovered and will remain in place until the summer of 1979.

The two-year oceanographic study of Bridport Inlet, in cooperation with Petro Can, continues. Bridport Inlet is the proposed site of an LNG loading terminal on Melville. The study of water structure and circulation throughout all seasons provides a basin for heat budget studies related to ice-housekeeping in the inlet.

The arctic polynya heat budget study continued into its second year with field work during February and March, 1979. Studies on the energy exchange between the air and the sea in the polynya are being done in cooperation with the Bedford Institute of Oceanography, the Atmospheric Environment Service and the Canada Centre for Inland Waters. Novel instrumentation installed in a model aircraft was used for micro-meteorology measurements over the polynya off Cape Collins on Dundas Island in March, 1979.

Laboratory studies of deep-water oilwell blowouts are continuing at the University of Calgary. Interactions of oil droplets, gas and gas hydrates have been observed in a high-pressure tank using circulating water to stabilize oil droplets.

In cooperation with the Danish Geological Survey, recording instruments were installed to measure currents, salinities and temperatures in a west, Greenland fjord, Marmorilik. Mining operations in this fjord have stimulated interest in fjord circulation under sea ice.

Under a SCOR Working Group (Scientific Committee on Oceanographic Research) a study was completed on a new *Practical Salinity Scale (1978)*. It will be used internationally to standardize observations.

A *conductivity chain*, to yield values of water salinity at selected depths, has been under development. Its unique characteristic is long-term stability in extended use. A first application to water structure studies was made in March, 1979, Bridport Inlet. It will be recovered in August, 1979.

The Beaufort Sea and Parry Channel were the geographic foci of the Arctic Marine Sciences interest. The 14 Random-Access Measurement System Data Buoys, air-dropped on the sea-ice well offshore in the Beaufort Sea in January and March, 1978, drifted with the Cyre circulation until they ceased reporting. One durable buoy operated until October, having travelled 800 km in an erratic path from offshore Banks Island to near Point Barrow, Alaska. The buoy drift tracks trace the erratic drift of sea ice, allowing a statistical analysis to be made. A first report of results will be made at the Canadian Meteorological and Oceanographic Congress in Victoria, B.C.

Radar tracking of icebergs in eastern Lancaster was done from early July until late September. The radar facility was mounted on a 450 m high Hope Monument on Devon Island.

Three current-meter moorings left in the deep water of eastern Lancaster Sound to overwinter, failed to surface in August, 1978. Recovery by dragging was hampered by the heavy ice. It is hoped that these moorings, as well as those in Wellington Channel, can be recovered by mini-submarine in August, 1979. Three overwintering of current meters on the

Barrow Sill, north of Somerset Island, did not deploy. Specially designed moorings could not be emplaced by CCG *Pierre Radisson* due to ice cover in a region usually open in the summer.

A study was completed in January, 1979, of possible environmental hazards of LNG transport in Parry Channel for the Arctic Islands Pipeline Study Board. It highlighted necessary environmental studies in Parry Channel not identified by PetroCan in the draft Arctic Pilot Project Environmental Impact Statement.

A contract study, on behalf of the Arctic Marine Oilspill Program of EPS, was conducted on deep water oilwell blowout scenarios for Lancaster Sound. This study, completed March, 1979, used extensive information obtained from deep water blowout simulations and two year's surface current information in Lancaster Sound.

Ocean Chemistry's ship of opportunity program went on a hydrographic cruise to Amundsen Gulf to collect samples of seawater for nutrient analysis.

Members of the Frozen Sea Research Group and Arctic Marine Sciences provided advice to northern offshore petroleum industry and a number of government agencies. Measurements were made on gas flows leaking from sub-sea wells in the Beaufort Sea. Reviews were conducted of the Davis Strait offshore drilling proposal. There was participation in the Joint Industry-Federal Government Steering Committee on Problems of Hydrocarbon Development.

Plans for 1979-80

The Polynya Project will continue for its third year in the spring of 1980, studying the heat exchange between the atmosphere and the open water of the polynya off Cape Collins on Dundas Island. There will be participation by the Bedford Institute of Oceanography, the Atmospheric Environment Service and the Canada Centre for Inland Waters.

In cooperation with the Department of National Defences' NORPLOY-79 project, a joint Institute of Ocean Sciences and EMR mini-submarine program will be launched during August, 1979. The submersibles PISCES IV from IOS and the SDL-1 from DND in Halifax will be used to investigate the Scott Inlet oil seep off Baffin Island, observe iceberg bottom-scoring off Scott Inlet, retrieve current meter moorings temporarily lost in eastern Lancaster Sound and on the Wellington Channel Sill, and survey benthic life in various areas.

Remote Sensing of chlorophyll at the sea surface will be tested over eastern Lancaster Sound and parts of northern Baffin Bay during August, 1979. Cooperating are the University of Paris, PetroCan and EMR. Measurements of chlorophyll will be made from the MV Theron.

Bridport Inlet, Melville Island, will continue to be the site of water structure and current measurements with field trips planned for July and August, 1979.

The Ocean Chemistry Division will continue the analysis of bottom sediment samples collected during the Beaufort Sea Project (1974-75) and from Amundsen Gulf. Sediments will be aged and their trace metal content determined.

The Arctic Marine Sciences Section will be disbanded in 1979. Remaining personnel will be re-assigned in IOS and, as far as possible, the functions of the section will be continued.

Central Region

Review 1978-79

The Arctic Oceanography Project – in support of Transport Canada's R&D program on the marine transportation of energy commodities – concentrated this year on the Sverdrup Basin. The immediate objective of this project was to collect current and salinity/temperature data to acquire a basic understanding of the physical oceanography in this area. However, the ultimate aim is to design specific dynamics-related experiments with other agencies to examine motion and deformation within the ice cover.

Other applications arising from these studies include: 1) the provision of baseline data which could assist industry in the design and operation of facilities for the exploration of hydrocarbon and mineral finds; 2) assistance for DFO in reviewing environmental impact statements; and 3) planning and advising on contingency measures.

Fourteen current meters were moored and retrieved (at 3 m below the ice and at 50 m depth) at seven locations from Sabine Peninsula (Melville Island) to Ellef Ringnes Island and across to Bathurst Island. Logistic support was provided by Panarctic Oils Ltd.

A major physical-biological cruise in Chesterfield Inlet and Baker Lake was completed. The physical oceanographic data collected will be used to calibrate and test numerical models of tidal propagation, currents and saltwater intrusion in the system. Temperature and salinity data, results from the models, along with the biological data will assist studies into the distribution and exchange of zooplankton between Baker Lake, Chesterfield Inlet and Hudson Bay.

Plans for 1979-80

The 1980 arctic project will center on the development of a profiling current meter. This system, designed specifically for use in the high arctic, will obtain data in the frictional boundary layer beneath the ice. It will also obtain information on currents through the entire water column. The collected data will be used with time series current records at specific depths to examine the momentum transferred from tidal and non-tidal currents to the ice.

Marine Sciences and Information Directorate

Review 1978-79

The Marine Sciences and Information Directorate participated in interdepartmental committees such as the Panel on Ice, Canadian Committee on Oceanography, the Advisory Committee on Industrial Benefits and the Steering Committee for the Motor Vessel Arctic Scientific Evaluation Project.

It studied the influence of ice cover on the arctic tide, developed OAS ice research programs, and was federal scientific authority for Melville Shipping Company's analysis of ice conditions in Viscount Melville Sound. The directorate has been responsible for collection of ice data in Lancaster Sound using a radar located on Bylot Island.

Plans for 1979-80

Membership in the Interdepartmental Environmental Review Committee will be undertaken. The directorate will continue its study of arctic physical oceanography and arctic marine applications of remote sensing technology.

Canadian Hydrographic Service

Responsibilities

The service conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern regions.

Review 1978-79

CSS Pandora II completed the offshore survey of Amundsen Gulf. A new ram transducer was fitted during the winter so the ship could continue sounding during brisk winds in August. The Radium Express, chartered for operations on the Mackenzie River, completed a survey of Shallow Bay and the West Channel in the Delta. All of the Mackenzie River Charts were revised and a surveillance flight made of the artificial islands in the Beaufort Sea.

CCGS Narwhal was used in Hudson Bay to complete the multiparameter offshore survey. A joint bathymetric-gravity survey was carried out over the ice northeast of the Belcher Islands. Two launches were used to carry out a survey of Baker Lake. Modern surveys now exist from the entrance to Chesterfield Inlet to the settlement of Baker Lake.

In February and March, 1979, a thorough ice survey was carried out on Penny Strait and Queens Channel.

CSS Baffin started a major survey of Ungava Bay and completed one on the approaches to the Koksoak River. The severe ice conditions in the eastern arctic limited the availability of Canadian Coast Guard icebreakers. CCGS John A. MacDonald surveyed the approaches to Cape Dorset, while CCGS d'Iberville was used to survey the western approaches to Resolute, the inner end of Slidre Fiord, the entrance to Dundas Harbour, the tanker anchorage at Pond Inlet and the beaching area and approaches at Clyde. The hydrographers transferred to CCGS Pierre Radisson, the new icebreaker, and carried out a revisory survey at Kovitoq and range surveys in Pike-Reson Channel, in the approaches to Frobisher Bay.

The coverage of the Mackenzie River by strip charts was completed. A new chart was published of the Lincoln Sea.

The General Bathymetric Chart of the Oceans covering the North Atlantic was published. Considerable progress was made in the acquisition of bathymetric data from oil and geo-physical companies in the arctic.

The Marine Arctic Reconnaissance Systems (MARRS) was brought closer to completion. This consists of a sector-scanning sonar to detect underwater hazards. Considerable progress was made on the arctic hydrography development program.

Plans for 1979-80

The transfer of CCGS Narwhal to the Pacific coast caused cancellation of the survey program in Hudson Bay. The joint bathymetric-gravity survey, through the ice, will be resumed in M'Clintock Channel.

CSS Baffin will extend the surveys in Ungava Bay to cover the George River and its approaches. She will then be used to run a multiparameter survey at 20 nm line spacing in Davis Strait. Canadian Coast Guard icebreakers will be used on an opportunity basis in the eastern arctic.

In the western arctic, CCGS Nahadik will survey Summer's Harbour and Wise Bay and approaches. MV Radium Express will be used, probably for the last time, to survey areas on the Mackenzie River where the channel is shifting.

A major study of tides in the arctic will be started, using funds from the arctic hydrography development program. The possibility of interpreting shallow areas from coloured aerial photography will be evaluated. ■

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Health

Medical Services Branch

Yukon Region

Medical Services Branch, Yukon Region, administers and delivers health care throughout YT. It also serves as the Territorial Health Department and the program medical officer is chief medical officer for the territory.

The branch operates a general hospital, three cottage hospitals, two nursing stations, ten health centers and four health stations. These facilities are centers for comprehensive public health and treatment programs. In addition, medical services has a School Dental Health Program to provide basic dental care to all Yukon school age children. The branch facilitates community clinical visits by private physicians and dentists and arranges visits of medical and dental clinics to outlying communities. A visiting Medical Specialists Program is operated out of Whitehorse General Hospital.

Costs are shared between Medical Services Branch and the Yukon Territorial Government. The Territorial Government administers the health care insurance plan and contributes to the capital and operating costs of the health care system.

Review 1978-79

Throughout the year Medical Services Branch, Yukon Region, made extensive and detailed preparations for the transfer of health personnel and facilities to the Yukon Territorial Government. This transfer was postponed, however, on request from Yukon native organizations.

In June, 1978, the Whitehorse General Hospital accreditation status was renewed for two years.

In September, 1978, the strike of nursing staff of hospitals and health centers was settled and a new contract ratified. This followed a series of rotating strikes.

In October, 1978, the first meeting of the newly-formed Hospital Advisory Board was held. The board, representing the people of the Yukon, assesses the community's needs in relation to the operation of Whitehorse General Hospital.

The School Dental Health Program was expanded in September, 1978, to include grade 8 students of Yukon schools. Professional direction is provided by the regional dental officer and members of the Yukon Dental Association.

There were two significant outbreaks of disease in 1978-79. The first was an outbreak of tuberculosis in the Watson Lake/Lower Post, B.C., area. A massive tuberculin and x-ray survey was undertaken, and extensive case follow-up work went on throughout the year. The second outbreak was Salmonella Java in Dawson City. The outbreak was investigated by the environmental health officers and the Communicable Disease Control Unit. Follow-up was undertaken by the nursing staff in Dawson.

Yukon Region increased its program effects in health, education, prenatal classes, and nutrition education. A report, "Infant Nutrition in the Yukon" was published in December.

Work was undertaken to introduce a Yukon Community Health Representative Program in early 1979.

Yukon Region continued to provide a subsidy and administrative support to medical specialists who came from outside the Yukon to conduct clinics in Whitehorse in paediatrics, orthopedics, dermatology, ophthalmology, internal medicine.

Major renovation work began on the Faro Cottage Hospital. The expansion and renovation of the facility is expected to be completed in 1979.



One hand reach

Medical Services maintained its membership on the Yukon Water Board, helping prevent contamination of waterways and municipal water supplies.

Northwest Territories

Review 1978-79

Plans were made to physically relocate the 66 regional headquarters personnel from Edmonton to Yellowknife as a result of the Northwest Territories Regional Headquarters move.

The NWT Region helped Alberta Region operate x-ray clinics and provide computerized recall for tuberculosis follow-up. The region also provided consultation services and a computerized recall service to control tuberculosis in the Yukon. An outbreak of tuberculosis at Rae/Edzo required evacuation and treatment of 23 active cases. A further 134 people were placed on chemoprophylaxis as a preventative measure.

Other health activities include the Child and Maternal Health Programs, School Health Program, Accident Prevention and Mental Health. A departmental Maternal and Child Health consultant carried out a study of health care in the Keewatin and Baffin Zones and evacuations for prenatal confinements from Keewatin Zone were reviewed. Infant nutrition guidelines, and a questionnaire to provide data on infant feeding oriented toward the needs of the NWT population, has been developed.

The incidence of venereal disease decreased by two per cent from 1977.

Contracts were arranged with the Universities of Manitoba, McGill, Toronto and Alberta to provide medical consultative services to the residents in the Northwest Territories.

Dental services were provided by seven departmental dentists. There are also private dental practitioners under contract to the department to provide dental care in communities not served by departmental dentists or dental therapists. Preventative dental care has been expanded through employment of eight graduates of the Fort Smith School of Dental Therapy. These dental therapists carry out restorative dental procedures under the general direction of the dentists based at Inuvik, Frobisher Bay and Churchill. There were 21 students at the Fort Smith School of Dental Therapy during the year, including two sponsored by the Government of the Northwest Territories, four by the Government of the Yukon, one by the Federal Government, two by the Government of Saskatchewan and 12 privately. A special dental clinic was carried out in Inuvik by the Fort Smith School of Dental Therapy and 1 788 appointments were made.

Departmental General Hospitals were operated at Inuvik, 55 beds; Frobisher Bay, 31 beds; and at Fort Simpson, 12 beds. In addition, there was one Cottage Hospital at Edzo with eight beds. There are 39 nursing stations throughout the territories.

Physician services were provided by 18 departmental physicians who covered all centres except Yellowknife, Hay River and the Keewatin District. Private practitioners serviced Yellowknife and Hay River and the University of Manitoba, through its Northern Health Unit, provided general practitioner coverage in the Keewatin. A private practitioner supplemented departmental practitioners in Inuvik and another provided certain special services at Fort Smith.

Nine NWT nurses attended the Clinical Training Program provided each year by the Universities of Alberta and Manitoba. In addition, seven nurses graduated with degrees from Canadian universities, including three Bachelor of Science of Nursing, one Masters in Public Health Administration, two diplomas in Community Health Nursing and one diploma in Occupational Health Nursing. There were also four nurses enrolled in university nursing degree courses.

A public health engineer and nine environmental health officers did health inspections and surveys of environmental pollutants that may affect health.

Ophthalmological services were provided under contract with the Medical Faculties of the Universities of Alberta, Manitoba and McGill. In addition, ophthalmological services were available at Stanton Yellowknife Hospital.

Orthodontic services were made available at Yellowknife through contract arrangements.

An expanded Public Service Health Program carried out 1 181 examinations during the year.

Smoke detectors were installed in all Nursing Stations. A new duplex residence, built at Fort Good Hope, will allow the Nursing Stations to be renovated and provide additional space for public health programs.

Health Services and Promotion Branch

Responsibilities

Health Services and Promotion Branch encourages and assists Canadians to adopt a way of life that enhances their physical and mental well-being and provides leadership and coordination in assisting the provinces and territories to bring health services to national standards.

The Health Promotion Directorate develops and implements, in cooperation with provincial governments and non-government organizations, programs of health information and education. It fosters research to provide information and methodology for establishing programs, strategies and techniques in health promotion.

The Health Services Directorate assists in the development of health care services for all Canadians by assisting provinces and territories to improve the efficiency and effectiveness of health institutions, mental health services, community health, and family planning services.

It fosters research to further the objective of improving the effectiveness of health services in Canada.

The Health Resources Directorate administers the national health insurance programs and makes payments to the provinces in support of their hospital, diagnostic, medical and extended health care services. It ensures sufficient qualified health manpower, through collection of data and exchange of information, and provides funds to provinces under the Health Resources Fund. It also provides information, consultation and guidelines for the design and construction of health facilities.

The Research and Evaluation Directorate finances research projects, demonstration projects and studies, and under the National Health Research and Development Program, provides money for training and assistance to researchers.



Sick woman being brought to Medivac aircraft from a hunting camp on Steensby Inlet, Baffin Island.

Review 1978-79

The Health Services and Promotion Branch, established during 1978-79, incorporates most of the functions of the former Health Programs Branch. In addition, it brought together programs related to health promotion and health services. Programs related to family planning and non-medical use of drugs were among those transferred to this new branch.

Some functions previously performed by Health Programs Branch, in areas such as health statistics and intergovernmental relations, have been transferred to other branches.

The Canada Health Survey made household visits to assess the health of Canadians. By the end of the fiscal year, over 12 000 households had been contacted and 92 per cent of them had undergone detailed interviews. One quarter of the households completed fitness and other tests and provided blood samples for analysis. Results will be published in 1979-80.

Financial support for the provinces and territories continued according to the terms of federal legislation and federal-provincial agreements.

Plans for 1979-80

Financial support to the provinces and territories, along with consultant services, advisory and research support, will continue.

Health Protection Branch

Through the Health Protection Branch, the department provides an integrated program to protect the public against unsafe foods, drugs, cosmetics, medical and radiation emitting devices, harmful microbial agents, technical and social environments, environmental pollutants and contaminants of all kinds. It enforces the Food and Drugs Act and Regulations, the Narcotic Control Act and Regulations, and the Radiation Emitting Devices Act and Regulations.

An environmental Health Directorate carries out studies on the adverse effects on human health of the chemical and physical environment. With the Department of Consumer and Corporate Affairs the directorate jointly administers the Hazardous Products Act and with the Department of Environment the Environmental Contaminants Act.

A Laboratory Centre for Disease Control Directorate provides national microbiological reference services and develops improved laboratory diagnostic procedures and other measures to combat communicable disease agents.

Review 1978-79

The Environmental Health Directorate, through the Radiation Protection Bureau, investigated the health impact of COSMOS satellite debris. Air, drinking water and caribou meat were monitored for radioactive contamination. The program provided northern residents with assurance that their environment was free of radioactive contamination and that water and game were fit for human consumption.

In addition, the Bureau of Chemical Hazards of the Environmental Health Directorate studied the effects on human health of the chemical and physical environment. The directorate, jointly with the provinces, revised Canadian Drinking Water Standards and Objectives and conducted research into drinking water quality. The results of these activities will have direct benefits to northerners.

The Laboratory Centre for Disease Control continued to provide a variety of microbiological laboratory national reference services. A cooperative quality assurance program was available to public health diagnostic laboratories to improve laboratory services. Epidemiological surveillance activities on communicable and non-communicable diseases were continued.

Social Services

Social Service Programs Branch

Responsibilities

The Canada Assistance Plan, enacted in 1966, contributes 50 per cent of costs of provincial, territorial and municipal public assistance and welfare services expenditures. The Plan helps provide adequate assistance to persons in need and encourages development and extension of welfare services to prevent and remove poverty, child neglect and dependence on public assistance. In addition to the cost-sharing arrangements, the Canada Assistance Plan makes consultant services available to the provinces and territories for income support, day care, child welfare, institutional care and community development.

Review 1978-79

The total contribution under the Plan was estimated at \$7.8 million during the year to both NWT and YT.

An Agreement between Canada and the Government of the Yukon Territory provides sharing of the costs of care and after-care services to young offenders committed under the Juvenile Delinquents Act. The Agreement, signed in March, 1977, was renewed for the fiscal year 1978-1979. Cost-sharing of these services was estimated at \$500 000 for 1978-1979.

The Vocational Rehabilitation of Disabled Persons (VRDP) Program, through which the federal government shares the cost with the Yukon and Northwest Territories of providing vocational rehabilitation to persons who cannot work because of physical or mental disability, was discussed and interpreted. Rehabilitation coordinators of both territories actively participated in national and regional meetings.

The Yukon Territory has developed an important Vocational Rehabilitation Program and is making good use of the VRDP cost-sharing possibilities. In 1978-1979, claims were approved for \$453 000, a portion of which was related to expenditures incurred in previous years.

In the Northwest Territories, the Vocational Rehabilitation Program was undergoing a complete reorganization in the Department of Social Services. It is expected that claims related to the 1978-1979 fiscal year will amount to about \$50 000.

Income Security Programs Branch

Family Allowances

Family Allowances are paid monthly on behalf of children under 18 who are maintained by a parent or guardian resident in Canada. Payment is normally made to the mother. To be eligible for the allowance at least one parent must be a Canadian citizen, a permanent resident, or a visitor or permit holder admitted to Canada under the authority of the Immigration Act for not less than one year. Their income during the year must be subject to Canadian income tax.

As of December, 1978, the allowance was paid on behalf of 7 604 children in the Yukon, representing 3 841 families and 19 634 children in the Northwest Territories, representing 8 007 families.

For the calendar year 1978 the rate payable in the Yukon and Northwest Territories was the federal rate of \$25.68 per month.

A new program known as the Child Tax Credit started in January, 1979. This program, administered through the income tax system, provides an annual benefit of \$200 on behalf of each eligible child, payable in full to families with net incomes of up to \$18 000 and reduced gradually for incomes above that level. Effective the same date, Family Allowance benefits were reduced to \$20 per child per month. These changes increase federal child benefits to low and middle-income families.

Old Age Security

The Old Age Security is a non-contributory program providing a monthly benefit to all persons 65 years of age and over who can satisfy certain basic residence requirements and who are Canadian citizens or legal residents of Canada.

The Act also provides for a Guaranteed Income Supplement and a Spouse's Allowance. The Guaranteed Income Supplement is an income-tested benefit payable to pensioners resident in Canada who have a limited amount of income. The supplement is normally based on the pensioner's income in the preceding calendar year.

The Spouse's Allowance is also an income tested benefit payable to the spouse of an Old Age Security pensioner. To be eligible, the spouse must be between 60 and 65 years and meet the same residence requirements as for the basic pension. The maximum monthly allowance, is reduced as family income other than the basic pension increases.

In January, 1979, the basic pension was \$167.21. The maximum monthly supplement was \$137.28 for a single or married pensioner whose spouse was not receiving the pension or a Spouse's Allowance and \$114.15 each for a married couple.

In December, 1978, there were 659 Old Age Security pensioners in the Yukon. Of this number, 355, or 53.87 per cent, received a supplement. In the Northwest Territories there were 1 169 Old Age Security pensioners, with 931 or 79.64 per cent receiving a supplement. There were 14 recipients of Spouse's Allowance in the Yukon and 55 in the Northwest Territories.

The Family Allowance and Old Age Security programs are administered in the Yukon and Northwest Territories from the Regional Income Security Programs Office, Edmonton, Alberta.

Canada Pension Plan

The Canada Pension Plan, in existence since January 1, 1966, is a compulsory, contributory, earnings-related plan which, together with the Quebec Pension Plan, covers virtually all employed persons between the ages of 18 and 70 in Canada. Employees contribute at the rate of 1.8 per cent of earnings above a minimum level, called the Year's Basic Exemption, up to a prescribed limit, called the Year's Maximum Pensionable Earnings. These contributions are matched by the employer. Self-employed persons contribute 3.6 per cent on the same earnings range. In general, the contributory period spans from 18 to 65. A retirement pension is payable to a contributor at age 65, whether or not the person is working. The maximum retirement pension in 1979 is \$218.06 per month.

Disability pensions are payable to contributors suffering from severe or prolonged mental or physical disability. It consists of a fixed monthly amount of \$52.51 in 1979 plus 75 per cent of the contributor's retirement pension. The maximum monthly disability pension in 1979 is \$216.06.

The full survivor's pension is payable to disabled surviving spouses, to surviving spouses with dependent children, and to surviving spouses 45 years of age or older. The full pension of a surviving spouse below the age of 65 includes a basic amount (which, in 1979, stands at \$52.51) plus 37.5 per cent of the deceased contributor's retirement pension. The maximum monthly benefit payable in 1979 to surviving spouses under the age of 65 is \$134.28. A surviving spouse aged 65 or over receives a pension of 60 per cent of the deceased contributor's retirement pension. The maximum surviving spouse's pension payable in 1979 to spouses 65 or older is \$130.84 monthly. Children's benefits are payable on behalf of a deceased or disabled contributor's dependent children who have never been married. The 1979 rate is \$52.51 a month for each child.

A lump-sum death benefit \$1 170 in 1979 is paid to the estate of a deceased contributor.

Table A
Beneficiaries by the Type of Benefit and by Territory
December, 1978

Territory	Retirement Pensions	Disability			Survivors	
		Disability Pensions	Children's Benefits	Death Benefits	Surviving Spouse's Pension	Orphan's Benefits
Yukon	289	27	19	3	156	155
NWT	81	6	7	2	81	175



Backbend



One foot High Kick

Fitness and Amateur Sport

The Northern Games bring native people of the Northwest Territories, Yukon and Alaska together for an annual summer celebration of traditional native games, dances and skills. Participation and enjoyment are the key aspects and the Games are considered a festival. There is no age limit on competitors and a number of elderly native people are vigorous participants.

The 1978 Northern Games were held in Eskimo Point, Northwest Territories. Financial contributions were supplied through the Fitness and Amateur Sport Branch. The 1979 Northern Games will be held in Inuvik, Northwest Territories.

The next Arctic Winter Games will be hosted by Whitehorse in 1980. These Games are an international sports and cultural festival, held every second year for participants from the Yukon, Northwest Territories, northern Quebec and Alaska. The Arctic Winter Games provide a common ground for development of athletics and cultural and social interchange between northern people.

The Native Recreation Program was created to develop native sport and recreation, increase the quality or diversity of opportunities, and help raise the level of native peoples' performance in sport and recreation.

During the 1979-80 fiscal year assistance will be available to identify and train sport and recreation leaders from within the native community. ■

Department of Indian Affairs and Northern Development

DIAND



Inuktitut magazine staff: Lucy Amarook, John MacDonald, Dave Webster, Joe Mautari'naaq; Ottawa, Credit: Iglaaq

Northern Affairs Program

Northern Policy and Program Review Branch

Responsibilities

The Policy Development Division coordinates and advises on policies related to the department's responsibilities in the North. It also examines major selected issues and develops policy options and recommendations on them.

The Program Review Division monitors, coordinates and conducts reviews and evaluations of on going programs affecting the North. The division also collects, interprets and publishes information on the annual northern expenditure plans of all federal and territorial government departments and agencies involved in activities related to Canada's north.

The ACND Secretariat became part of the Northern Policy and Program Review Branch in November, 1978. The branch will now be able to provide a better focal point for coordinating ACND member's input into a policy planning process to maintain a coherent framework of northern policies and programs. The Secretariat supports the eight principal committees that constitute the basic structure of the Advisory Committee on Northern Development (ACND). These committees are: General, Policy, Transportation, Science and Technology, Communications, Employment of Native Northerners, Federal-Territorial Economic Planning, and the Advisory Committee on Industrial Benefits from Natural Resource Development. Working and task groups are formed to study specific areas of concern and develop positions or policies on issues not directly within the purview of the principal committees. This structure provides an on going mechanism for inter-departmental consultation on policies, program planning and activities that pertain or may be applied to government objectives for northern Canada. The Secretariat publishes the annual report Government Activities in the North as directed by Cabinet.

A toponymic unit deals with all questions of geographical nomenclature affecting the Northwest Territories, Yukon Territory, Indian Reserves and National Parks.

Review 1978-79

In the policy development area, major efforts during 1978-79 were refinement of the overall policy planning process, the initial development of an assessment and review process for large-scale projects in the North and further elaboration of the National Objectives for Northern Canada. The division carried out its on going role in managing the operations of the Northern Program Policy Committee.

In the program review area, work started on development of procedures for planning and implementing regular program evaluations, including consultation with program managers to determine evaluation priorities. An evaluation of the Arctic Land Use Research Program was completed and pre-evaluation discussions on health, training and housing programs were initiated.

The Annual Northern Expenditure Plan for 1978-79, an annual publication containing data on the northern-related expenditures and employment of the federal and territorial governments, was released during the year. This report displays aggregate expenditure and employment information by agency and category of data, including an allocation of expenditures to the National Objectives for Northern Canada as established by Cabinet for the 1970's. Other categories of data include expenditures by economic function, object, location of responsibility centre, principal benefit and employment. Detailed expenditure and employment information for each departmental program is included along with a description of the program objectives. In view of the anticipated construction of the Alaska Highway pipeline, particular attention is being given to the planning and coordination of government construction activity in the Yukon Territory. Data relating to planned capital expenditures over the next five years on government construction projects were compiled by the division and reviewed by the Federal Interdepartmental Coordinating Committee (FICC) in the Yukon Territory.

The General Committee of the ACND met in June, 1978. Member departments formed a working group which developed a brochure on expeditions in the Polar Basin. Following discussion of the Annual Northern Expenditure Plan 78-79, three working groups were formed to examine Northern Health, Northern Housing and Northern Training programs.

The Committee on Science and Technology met in full session twice during the year. It reviewed issues of inter-departmental concern and exchanged views and perceptions with the Science Advisory Board of the NWT Council on the direction of science in the North. A committee working group developed proposals and submitted recommendations for a program to provide northern science research centres.

The Transportation Committee undertook studies and work on arctic marine policy, Mackenzie River dredging, Yukon rail extension, NTCL service to Great Bear Lake communities, LNG from the arctic, ice reconnaissance, Frobisher Bay dock, arctic air facilities policy, Dome Petroleum Arctic Marine locomotion, joint air service planning and review, CCG Polar Ice-breaker, eastern arctic re-supply, ALCAN Pipeline.

The Northern Communications Committee did not meet last year, but maintained liaison with member departments and agencies, on matters such as the ANIK-B experimental satellite.

The Committee on Employment of Native Northerners worked on identification of training and employment problems, mostly in the private sector, and planning for the 80's.

The Advisory Committee on Industrial Benefits from Natural Resource Development held eight meetings with major resource development companies to review various industry plans relative to oil and gas exploration and production. Projects examined included: Arctic LNG proposal (Trans Canada Pipelines and Petro Canada), Cold Lake heavy oil (Imperial Oil), Alsands (Shell) Beaufort Sea Oil Exploration (DOME).

The Federal Interdepartmental Coordinating Committee - Yukon, Federal Interdepartmental Coordinating Committee - Northwest Territories met regularly to deal with matters requiring action and coordination at the regional level.

The ACND Secretariat released the 1977-78 edition of Government Activities in the North. Produced in both official languages, it covered activities and development in the Yukon and NWT by the federal and territorial governments.

The Toponymic Unit assessed a study of 293 Inuit place names in the Repulse Bay area. Names in the current NWT gazetteer were reviewed in preparation for a new edition.

Approval was given to 358 new names as decisions were rendered on 437 names.

Plans for 1979-80

The Policy Development Division will continue its work on projects as outlined, with particular attention to the application of policy planning processes in regional socio-economic development, constitutional development and the interrelationships of these matters with native rights and claims.

The 1979-80 Annual Northern Expenditure Plan will be published in the fall of 1979. In addition, development of a process for planning and implementing program evaluations will be continued and individual program evaluations in selected areas will be carried out. The five-year capital expenditure plans for government construction projects in the Yukon Territory will be up-dated for further review by the FICC and other members of the Advisory Committee on Northern Development.

The ACND Secretariat will publish the 1978-79 edition of Government Activities in the North in the fall of 1979.

A departmental toponymic reference service will be organized. Decisions will be made on 167 names along the route of the Dempster Highway. Revision of the NWT gazetteer will be completed. Analysis of approved native place names will be undertaken.

Northern Coordination and Social Development Branch

Territorial Relations Division

Responsibilities

The Territorial Relations Division negotiates and administers federal-territorial financial agreements with the territories. This branch reviews fiscal and legislative policies and development plans for the Yukon and Northwest Territories and advises the Deputy Minister of matters relating to the administration of the territories. It also coordinates the work of the department and the governments of the Yukon and Northwest Territories in federal matters not related to natural resources, advises the commissioners of the Yukon and Northwest Territories on government administration, coordinates the transfer of provincial-type services to the territorial governments, and coordinates arrangements between the territorial governments and other federal departments and agencies in the area of territorial government responsibility.

Review 1978-79

The division continued to assess the effects of major amendments made to the Yukon and Northwest Territories Acts in 1974. These amendments increased the Yukon Council from seven to 12 members and empowered the Commissioner in Council to vary the size of council between 12 and 20. The first council of 12 was elected in November, 1974. Council membership was increased to 16 at the November, 1978, election, following passage of an ordinance by the Commissioner in Council.

The Northwest Territories Council became a wholly-elected body of 15 members in March, 1975. Native members made up a majority of the council. Bill C-28, adopted by Parliament in March, 1979, authorized the Commissioner in Council to increase the size of council to 25 by territorial ordinance. The Council (Amendment) Ordinance enacted in October, 1978, in anticipation of Bill C-28, sets the size of Council at 22. The next territorial election will therefore return 22 members.

The amendments to the Territorial Acts were complemented by several other constitutional changes that provided for the selection of a third elected member on the Executive Committee for the Northwest Territories.

In the Yukon Territory, a fourth elected member was added to the Executive Committee in December, 1977, and a fifth in February, 1979. The duties of the elected members include responsibility for advising the commissioner and administering one or more departments of the Territorial Government.

In the Northwest Territories, the elected members are chosen by the council and are formally appointed to the Executive Committee by the Commissioner. In the Yukon Territory, elected members are still formally appointed to the Executive Committee by the Commissioner but they are chosen by the leader of the majority party who decides on the number of elected members to the Executive Committee. The present composition of the Executive Committee for the Yukon and Northwest Territories respectively is two appointed and five elected and three appointed and three elected members.

The Yukon Commissioner is bound by the advice of the Executive Committee except on matters of special federal interest or responsibility.

In March, 1978, Parliament enacted Bill C-33, to amend the Canada Elections Act, the Election Expenses Act and the Northwest Territories Act to give the Yukon and Northwest Territories full legislative and administrative responsibility for territorial elections. The Yukon Council enacted complementary legislation March 1, 1978, to up-date its Election Ordinance. The subsequent general election was held on November 20, 1978.

A comprehensive NWT Elections Ordinance was enacted October 27, 1978, so that the next election will be held in accordance with territorial legislation. The election will be conducted under the direction of the Chief Electoral Officer of Canada. The election occurred on October 1, 1979.

Discussions were initiated or continued in other areas of possible responsibility transfer. These included: federally-administered health care programs, mine safety inspections, reconstruction and maintenance of highways.

Financial assistance to the governments of the Yukon Territory and the Northwest Territories was appropriated in 1978-79 in the following amounts:

Financial Agreements

YT	
Operating grant	\$ 17 386 000
Grant-in-lieu of income taxes	15 146 000
Capital grant	14 420 000
Loans	5 000 000

NWT	
Operating grant	128 292 000
Grant-in-lieu of income taxes ¹	—
Capital grant	54 198 000
Loans	4 800 000
Additional financial assistance (Contributions) outside the agreements	

YT	
Hospital care of Indians	500 000
Medicare for Indians	160 000
Low income rental - purchase housing	208 000

NWT	
Hospital care of Indians	6 746 000
Medicare for Indians and Eskimos	1 011 000

¹Effective January 1, 1978, the Government of the NWT levied its own income taxes.

The division coordinated the negotiations for Federal-Territorial Financial Agreements to begin April 1, 1978, for both territories.

Plans for 1979-80

The financial agreements covering fiscal year 1979-80 for both territories provide for assistance in the following amounts:

YT	
Operating grant	\$ 22 893 000
Grant-in-lieu of income taxes	12 877 000
Capital grants	15 481 000
Loans	5 000 000
NWT	
Operating grant	147 876 000
Grant-in-lieu of income taxes	*
Capital grant	54 815 000
Loans	4 000 000

*The 1979-80 Territorial Estimates includes an Income Tax revenue figure of \$20 406 000.



Syllabic typing course, Vocational training, Credit: Iglaaq

Social and Cultural Development Division

Responsibilities

The Social and Cultural Development Division administers programs supporting social and cultural development of Inuit and other northern native people. The division comprises five sections: Native Liaison, Eskimo Art, Cultural and Linguistics, Vocational Training and Administration.

The Native Liaison Section maintains contact with northern native associations. The section negotiates agreements and monitors funds for land claims research and development and institutes consultation with natives on northern development issues.

The Eskimo Art Section prepares exhibits from the department's collection of Inuit art and crafts for museums, universities and other institutions in Canada and abroad. It also provides information on Inuit art to institutions, the public, and keeps Inuit artists informed of events and issues relating to Inuit art.

Canadian Arctic Producers Limited and La Fédération des Coopératives du Nouveau Québec, the central marketing agencies for northern art and crafts, receive market development support. Assistance is also given to projects of individual cooperatives. The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Eskimo arts and crafts. Artists are advised and assisted in the protection of their copyright.



Taxidermy trainee with National Museum of Man - Ottawa, Moses Koneak, Peter May, Credit: Iglaaaq

The Cultural and Linguistics Section provides translation services in several dialects of the Eskimo language, publishes a quarterly magazine entitled "Inuktitut" and administers grants which enable Inuit to participate in a wide variety of cultural activities. The section sponsors Inuit film and video productions, communications and linguistic development projects and Inuit literature. The section works in close cooperation with Inuit Cultural Centres in the NWT and Labrador.

The Vocational Training Section provides counselling services to northern native students and other native people in southern Canada. It administers an on-the-job training program and a summer student employment program and arranges special training programs.

The Administration Section is responsible for a variety of special services and for policy and coordination of the Eskimo Loan Fund and associated financial assistance programs.

Review 1978-79

The Labrador Inuit Association's (LIA) statement of claim, presented to the Minister earlier in the year, was accepted as a basis for negotiation of a Labrador Inuit Land claim in August, 1978. The LIA is receiving funds to research and develop a proposal for the settlement of its claim. On October 31, 1978, an agreement-in-principle on settlement of Inuvialuit rights in the western arctic region of the Northwest and Yukon Territories was signed with the Committee for Original Peoples Entitlement. Due to the continued lack of progress in the resolution of a Mackenzie Valley land claim, funding for both the Dene Nation and the Metis Association of the Northwest Territories was suspended in October, 1978. Funding will resume once significant progress is demonstrated. The Inuit Tapirisat of Canada (ITC) reorganized its land claims program in February, 1979. The new negotiating structure is headed by the president of ITC and supported by the presidents of the Baffin Region Inuit Association, the Keewatin Inuit Association and the Kitikmeot Inuit Association. Funding was provided for participation of northern native people in the EAMES and EARP processes.

An important exhibition on Inuit Art in the '70's, prepared with the cooperation of the Agnes Etherington Arts Centre, will open in Kingston in July, 1979. It will travel to four other major Canadian galleries. Several smaller exhibitions were mounted to meet requests.

Photography of all Inuit prints was completed. Photo documentation of major Inuit sculpture in private collections was completed in four Canadian cities. Data continued to be forwarded to individual artists.

A tri-annual newsletter for Inuit artists, About Arts and Crafts, completed its first year with positive response. Of a circulation of 3 700, 2 500 are distributed in the North.

In cooperation with the Department of the Secretary of State and the National Film Board, the division supported Inuit film making. Training and technical assistance were provided to Inuit communications societies in Frobisher Bay and Pond Inlet and a number of films were produced by Inuit film makers through departmental sponsorship.

The division administers departmental support for Inuit participation in the Department of Communications' Anik B Satellite Program. Funded through DIAND, the Inuit Tapirisat of Canada and Taqramiut Nipingat Inc. (Northern Québec) have both undertaken major three year communications projects at a cost of \$1.9 million and \$900 000 respectively. These projects are expected to result in increased Inuktitut television programming for northern broadcast and enable greater participation by Inuit in all aspects of northern communications.

Inuktitut magazine was published quarterly. It made greater use of the orthographies authorized by the Inuit language Commission as part of an on going program to introduce the new writing systems.

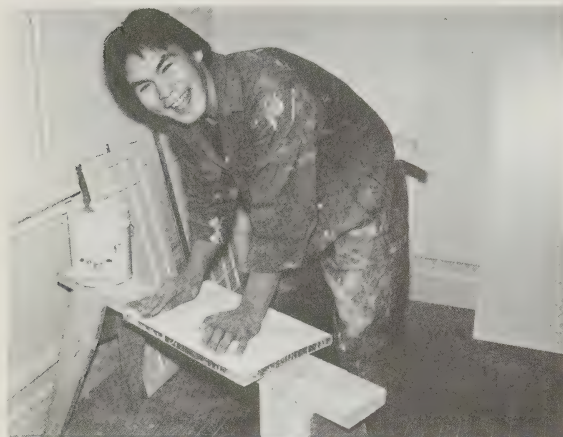
During the year, the department provided grants to individuals, groups and organizations to strengthen the cultural identity of Inuit. Artists were encouraged to attend major exhibitions of their work, to research material for the preparation of books, and to participate in cross-cultural conferences and music festivals.

The year also saw 166 native people being involved in on-the-job training. Over 50 completed their training and were placed in employment. Counselling services were provided to over 200 native people in southern Canada.

Inuit apprentices renovated a house in Ottawa which opened in January, 1979, as 'Inuit House'. It provides a social centre for Inuit in Ottawa.

Three special courses were offered in syllabic touch typing and a syllabic touch typing manual was developed.

The Eskimo Fund was increased to \$7.1 million. During the year a total of 41 loans, valued in excess of \$665 000 were made to Inuit and Inuit-controlled organizations. In addition, more than \$1.8 million was paid out in economic development contributions. The five year cooperative development program, initiated in 1977-78, continued in its objective of establishing financial stability and upgraded management skills for northern cooperatives.



Renovating Inuit House, Joanasi Savialjuk, Credit: Iglaaqa

To mark the 1959 establishment of the first arctic co-operatives, a "Co-op 20" program was initiated by the Canadian Arctic Cooperative Federation Limited and La Fédération des Co-opératives du Nouveau Québec. This program, designed to raise public awareness of the cooperative movement in the North, is supported by the department and the Government of the Northwest Territories.

Plans for 1979-80

The division will expand consultation and liaison with northern native associations. Loan agreements will be negotiated for claims research and development activities. Funds will be provided for northern development consultation between the government and native people. As the associations negotiate their land claims, special attention will be given to social and economic projects in the post-settlement period.

Organization of slides and photo library of Inuit prints and sculpture will continue. Expansion of artists' biographies has begun in cooperation with Cape Dorset and will be extended to other communities. The survey of major Inuit sculpture in private collections will continue.

The newsletter on Inuit art will continue. At the request of Canadian Arctic Producers, initial plans are being made for a group exhibition focussing on individual artists, primarily for circulation in the United States.

The division, in cooperation with the Government of the Northwest Territories and Inuit cultural organizations, will support programs and projects to strengthen Inuit culture, language and communications.

An instructors manual for syllabic touch typing will be developed. Special programs will be prepared to train northern people in film production. The student summer employment program will be expanded and planning of management training programs will begin. An Atlantic Region Eskimo Loan Advisory Board will be established to meet the special needs of Labrador Inuit.



Inuit House - Ottawa, Credit: Iglaaqa

Northern Social Research Division

Responsibilities

DIAND fosters, through scientific investigation and technology, knowledge of the Canadian North and the means of dealing with conditions related to northern development. The Northern Social Research Division is a focus for research on social processes in the North, the social implications of proposed programs, and the application of scientific findings.

The division plans, conducts and sponsors research in the social sciences, encourages and supports research by Canadian universities through the northern scientific training grants program and support for ACUNS; develops and maintains a northern social research information and documentation service; interprets research findings for program applications; assists the territorial governments in identifying and conducting research; provides the department and the territorial governments with analysis of social, economic and technological developments in the foreign North; administers a program providing scientific resource centres in the North to encourage expansion of scientific work and to develop a northern cadre of scientific expertise.

Review 1978-79

Research during 1978-79 was related mainly to problems of social change for native people in the North. A large portion of this work was done under contract by university and other scientists. Division officers supervised and coordinated programs in northern demography, renewable resources, land use, social and cultural dimensions of the consumption of indigenous foods, the evolution of self-government in the foreign North, Athapaskan language, the use of alcohol and the social economic and technological aspects of offshore drilling activities in the foreign North.

The Division also gathered and disseminated scientific, technical and other information about the Canadian and foreign North. The Information and Documentation Service took inventory of recent and current socio-economic research by federal and territorial governments and universities.

Important core-funding was provided to the new Association of Canadian Universities for Northern Studies. At its first annual meeting held at the Université du Québec à Chicoutimi, an important Ministerial speech was delivered on northern science. Funding was also provided to committees of the ACUNS concerned with native peoples relations and the project of a bibliography on northern Canada.

Last year was the 17th for the Northern Scientific Training Grants Program. Grants totalling \$390 000 were awarded, as recommended by a committee, to provide northern experience to scientists-in-training. The intention is to develop a commitment to northern work. At the request of the division, the grants program was evaluated by the Association of Canadian Universities for Northern Studies. The evaluation showed that the program has achieved its objectives. The criteria were changed slightly in 1978-79.

Grants were made to: Committee on Arctic and Alpine Research, (British Columbia); Boreal Institute for Northern Studies, (Alberta); Committee on Northern Studies, (Manitoba); Institute for Northern Studies, (Manitoba); Institute for Northern Studies, (Saskatchewan); Committee for Arctic and Sub-Arctic Research, (Toronto); Northern Research Group, (Ottawa); Northern Research Committee, (Western Ontario); Presidential Committee on Northern Studies, (McMaster); Centre for Northern Studies and Research, (McGill); Centre for Research in Labrador, (Memorial); Committee on Northern Studies, (York); Northern Studies Committee, (Queen's); Groupe de recherches nordiques, (Montréal); Centre de recherches sur le Moyen-Nord, (Québec à Chicoutimi); Centre d'Études Nordiques, (Laval); Centre d'Ingénierie nordique, (École Polytechnique, Université de Montréal); Committee on Northern Studies, (Waterloo); Committee on Northern and Native Studies, (Carleton).

An additional \$35 000 was awarded to Canadian universities for specified research into northern problems identified by government.

The division operated the Northern Scientific Resource Centre at Inuvik. This laboratory, opened in 1963, provides general laboratory and other facilities for research in a variety of disciplines in the Mackenzie Delta Region. Another Northern Scientific Resource Centre at Igloolik, opened in the summer of 1975, supports research in the eastern arctic. A contract for \$145 000 was let to Built Environment Ltd. for a pre-planning study on a third centre in Whitehorse to serve the Yukon area and on new scientific facilities in Yellowknife.

Plans for 1979-80

The division will sponsor and carry out research programs on social questions in northern Canada and the impact of large resource developments on the people of the North. The social implications of renewable resource development will be a major concern of the division's research. The Athapaskan Language Project and studies on alcohol will be pursued in collaboration with the Government of the Northwest Territories. It is expected that a major research program in northern demography will be launched.

The Circumpolar Unit will collect, review and update information on the foreign North. A series of maps showing the economic, social and technical development of these countries and a series of studies on native self-government will be completed.

The Northern Social Research Information and Documentation Service will update its inventory of recent and current federal and territorial governments, socio-economic research and include the work by native associations, universities and industry. The service will also prepare special lists and bibliographies on priority research areas of the Northern Program.

The Scientific Training Grants Program will allocate \$400 000 to research institutes of Canadian universities. Planning for further scientific facilities in the North will continue. Financial support will again be provided to the Association of Canadian Universities for Northern Studies.

The division will continue to play a major role in coordinating research needs and programs of the North through the Northern Program Research Committee.

Northern Environment

Water Resources Division

Responsibilities

The division protects and manages inland waters of the Yukon and NWT and arctic sea waters adjacent to the mainland and islands of the Canadian arctic. It also controls the use of land and waters for hydro power developments on federal lands south of 60°. These responsibilities are carried out under the Northern Inland Waters Act, Arctic Waters Pollution Prevention Act and the Dominion Water Power Act.

Review 1978-79

Approximately 400 applications to use water were received under the Northern Inland Waters Act, with 375 authorizations and six licences issued. Three licences were issued for mining and three for municipal purposes.

Drilling activity in the Beaufort Sea increased with an extended drilling season. Three drill-ships were engaged and on-site monitoring was provided by inspectors. Three water licences were renewed under the Dominion Water Power Act for hydro developments on federal lands in Alberta. In addition, a survey permit was issued to Calgary Power Ltd. to carry out hydro feasibility studies on the Slave River at the Alberta-NWT border. The division participated in many working groups over the year with much time spent on the Mackenzie Basin Study and discussions on possible offshore drilling in the eastern arctic. Studies included a hydro-power inventory of the Bathurst Inlet - Burnside River area, the economic value of water in the North and administration of water on native lands.

Work was completed in the Hay River area under the joint DIAND-DOE flood hazard mapping program. Advice was provided on matters pertaining to pipelines, oil and mineral development, water supply and waste disposal.

Plans for 1979-80

Offshore oil and gas drilling in the eastern arctic, in addition to the expansion of drilling in the Beaufort Sea, will increase the need for monitoring and surveillance activities associated with arctic waters. A hydro power study will be carried out on the major rivers flowing into the western side of Hudson Bay. The flood hazard mapping program will be expanded with tentative plans for work in the Fort Simpson area. The second phase of a shore-zone management study will be completed and identify specific northern shore-zone problems and their management implications. The details of a Yukon River Basin Study Program will be developed and a comprehensive study of the water-related resources of the basin will evolve. Finally, the details of amendments to the Northern Inland Waters Act and Arctic Waters Pollution Prevention Act will be developed.

Land Management Division

Responsibilities

The division administers surface rights and environmental regulations for 3.9 million km² of northern Crown lands.

Review 1978-79

Land leases, sale agreements and reservations in effect in the Yukon exceeded 2 100 in 1978-79 and 1 500 in the NWT.

The policy affecting community land transfers to the territorial governments was revised by an announcement March 3, 1978. The policy limits future land transfers to existing built-up areas within communities and, to meet essential community needs, to vacant lands on a parcel-by-parcel basis. The revised policy replaced the former Block Land Transfer Program.

In February, 1978, an area of approximately 2 590 km² on Bathurst Island was withdrawn by Order in Council from further disposition under the Territorial Lands Act. This was done to develop, within a two-year period, a long-term management scheme for the Bracebridge-Goodsir IBP site identified by Panel 9 of the Canadian Conservation of Terrestrial Communities of the International Biological Program. In 1975, the Minister of Indian Affairs and Northern Development gave approval-in-principle for establishment of ecological sites in the North. The Bracebridge-Goodsir site withdrawal represents the first concrete step north of 60° in establishing such sites.

A Whitehorse North Planning Project, initiated jointly in 1977 with the Government of the Yukon Territory for an area of approximately 2 020 km², involves a series of public meetings. It will result in a recommendation for land management principles and plans for the study area. Similar projects in the Whitehorse-Carcross-Marsh Lake triangle, and one centred in the Haines Junction area, will be completed in 1979-80.

Efforts to meet demand for recreational lots in the Yukon and Northwest Territories have been sustained. Under the Cottage Lot Subdivision Program 100 more lots in the Yukon and 76 in the Northwest Territories were developed during 1978-79. Cottage lot development to date has been at Marsh, Tagish and Teslin Lakes in the Yukon and in the Yellowknife-Ingraham Trail region, and Sandy Lake area of the Northwest Territories. Inventories of recreational subdivisions in the Mayo/Dawson, Haines Junction, Watson Lake and Little Salmon Lake areas of the Yukon and the Yellowknife-Ingraham Trail region of the Northwest Territories have been undertaken.

More than 450 applications for land use permits for exploration and development related activities in the Yukon and Northwest Territories were received. The potential environmental impact was studied in each case and, following consultation with Environment Canada and communities that might be affected, operating conditions were prepared. Permits were issued for such operations as road construction, mineral exploration, petroleum exploration, campsites, quarrying, land clearing and artificial island construction.

The department conducted caribou monitoring studies in the Baker Lake area in addition to the 1977-78 studies. Information gained enabled the department to refine its regulatory program and ensure the viability of the caribou herds in that area despite exploration operations.

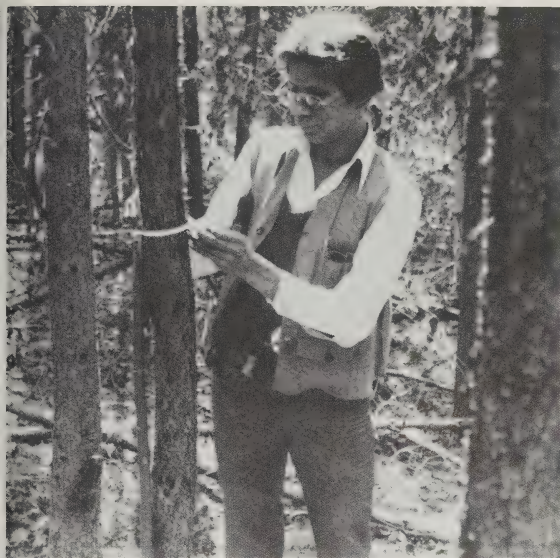
On July 6, 1978, the Minister announced that the conservation values of the northern Yukon (north of the Porcupine and Bell rivers) were of great importance. Withdrawal of the 38 700 km² area from further disposition of mineral or surface rights was initiated. At the same time he announced a task force to develop and recommend an integrated resource management plan for the entire 142 000 km² Canadian range of the Porcupine caribou herd.

Plans for 1979-80

Under the Cottage Lot Subdivision program 100 developed Yukon lots at Marsh Lake will be marketed, and an additional 100 developed. In the NWT, 20 lots developed at Sandy Lake will be marketed and new developments will be started to provide 35 lots to meet Yellowknife demand and 30 lots to meet the combined demand in the south Slave Lake, Inuvik and Fort Simpson areas. Questions of land disposition are under continuing discussion and review.

Further granular materials investigations along the Alaska Highway and in the Tuktoyaktuk area are planned. Revisions to the Territorial Land Use Regulations are planned in relation to exploration operations in critical caribou areas. The proposed Territorial Quarrying Regulations will be reviewed. A resource inventory program, for planning and land management purposes, will commence in the Yukon Territory in conjunction with the YTG. Public consultation on Bracebridge-Goodsir IBP ecological site is expected to be completed in 1979 to allow the IBP Working Group to review the results and present its final recommendations prior to March 1, 1980.

The Task Force on the Porcupine Caribou Range will begin its activities with an organizational meeting in Whitehorse in April or May, 1979. The terms of reference will be finalized and a general work program for the Task Force will be developed. The Task Force will work in close conjunction with other committees and working groups and will coordinate public consultation activities. The Task Force is scheduled to report by the end of December, 1979.



Native trainee establishing a sample plot for a forest inventory of the Nisutlin River Valley, YT

Forest Resources Division

Forest Management

Responsibilities

This program manages the forest resources of the North to stimulate economic development and employment opportunities for northern residents.

Review 1978-79

In both territories a production increase of about ten per cent occurred. The increase, mainly in the production of dimension lumber, provided work for 20 sawmills in the Yukon and six in the Northwest Territories.

In the Yukon, the total estimated production for 1978-79 was 124 924 m³, consisting of 92 966 m³ of sawtimber, 3 256 m³ of roundwood (posts, pilings, building logs and mine props) and 28 702 m³ of fuelwood. In the Northwest Territories there were 45 164 m³ of sawtimber, 1 801 m³ of roundwood and 6 672 m³ of fuelwood, for a total of 53 637 m³. The drop in the production of roundwood in the Northwest Territories is due to the lack of demand for construction piling in Inuvik.

The field work for the Slave River inventory was completed and a report prepared. The annual allowable cut justified by the report will enable long-term plans to be made for the Fort Resolution sawmill. As well preliminary forest type maps were completed for the entire Lower Liard Forest Management Unit in the Northwest Territories.

In the Yukon, a number of sites and types of cutovers were scarified with a Bracke cultivator. The scarification will form part of a series of regeneration trials being carried out in the Upper Liard River drainage. The Yukon Lands and Forest Service fielded a summer survey crew that took detailed tree measurements from selected stands. That data and information from the tree data bank of the Pacific Forest Research Centre are being analysed at the University of Alberta.

Plans for 1979-80

In the NWT a large field survey crew will work in the Liard Valley near Fort Liard. It is expected four summers will be required to field sample all of the Lower Liard Forest Management Unit. Other plans for the NWT include work with the Northern Forest Research Centre to develop a fuel mapping system for the fire management program.

The Yukon Lands and Forest Service will continue regeneration trials on areas prepared with the Bracke cultivator and will have a crew of summer students doing regeneration surveys in old logging areas. As well, the student crews will again take detailed measurements of selected trees in preparation for a standard volume table for the Yukon.

Forest Fire Management

Responsibilities

The role of Forest Fire Management north of 60° is to protect life, property, timber resources, power transmission and communication lines, recreation areas, watersheds, erosion prone sites, and game areas. The goal is to reduce forest fire damage to ensure the continuation of enjoyment and use of the resources by the people.

Review 1978-79

A reduced number of lightning storms in 1978-79 minimized the danger of fire in the Yukon. Although high and extreme forest fire hazards existed, 89 of a total of 102 fires were fought and controlled. The remaining 13 occurred in remote areas and were not fought. Twenty-four fewer fires occurred than in 1977-78 but the burned area of 7 395 ha was 97 per cent lower than the 277 074 ha burned last year. In the NWT a three-year drought subsided resulting in moderate fire damage conditions and a 40 per cent reduction in the long-term average number of wildfires. Of the 156 fires which occurred, 105, or 67 per cent, were fought. They accounted for a burned area of 515 ha. Of the overall 79 029 ha burned this year, 67 128 ha or 85 per cent occurred prior to July...normally the most hazardous fire season month.

An electronic lightning detection system was assessed at the regional fire centre in Fort Smith. The omni-directional unit performed well. It can detect and plot lightning strokes up to distances of 400 km. The complex automated detection equipment increases the efficiency of aerial detection patrols as aircraft can be directed to observe fire-prone areas based on the occurrence of lightning.

The Yukon Lands and Forest Service cooperated with the B.C. Forest Service. The air tanker bases at Watson Lake and Whitehorse were operated to facilitate the operational alert systems of both agencies. Yukon contract air tankers and a helicopter were used on seven B.C. fires. The B.C. Forest Service used Yukon air tanker bases and provided a DC-6B retardant bomber for use on a fire near Watson Lake.



DC-6B fire bomber dropping retardant to control a wildfire - Fort Smith

In the Yukon 10 contracted rappellers, with time-saving capability were used to reach fires by rope lowered from helicopter. Smoke jumpers were contracted again this year in the NWT because of their ability to initiate rapid action, particularly when diverted to fires while airborne. Rappellers and smoke jumpers are used north of 60° to increase the efficiency of fire control operations.

Plans for 1979-80

Additional fire prevention planning will be done in both territories to overcome recent increases in the number of man-caused fires along travelled waterways. In the Yukon, the development of an air tanker base will continue at Beaver Creek. Plans also include providing electricity to air tanker bases at Ross River and Dawson.

Eight new lookout towers are planned in the NWT. Potential sites include Pine Point, Buffalo River, Ebbut Hills, Red Knife Hills, Shiltee Rock and three locations along the Liard Highway. Air tanker base facilities will be improved at the Fort Simpson and Hay River airports. Four additional lightning detection units will be installed to form a network in concentrated lightning activity areas. Investigations will continue into the feasibility of acquiring current models of remote weather stations which can transmit required information to Fort Smith via land line and/or satellites.

Northern Environmental Protection Branch

Responsibilities

The branch coordinates, develops and recommends policies, strategies, plans and regulations to protect the Yukon and NWT environments and the adjacent offshore regions. It also sponsors applied research.



Lightning fires burn quickly in hot, dry weather - Fort Simpson

The branch develops policies concerning the impact of northern development and engineering on the environment, recommends northern research and serves as the link between the Northern Program and the Federal Environmental Assessment and Review Office.

Environmental Assessment Division

Review 1978-79

The principal task of the division has been to review/study and examine environmental matters associated with the Alaska Highway Pipeline. Recommendations on environmental terms and conditions have been provided to the Northern Pipeline Agency and a technical review of the Environmental Impact Statement has been prepared for the second phase of public hearings. Expert advice on hydrological matters was provided to the Environmental Assessment Panel.

Other tasks included the preparation of environmental guidelines for a potential uranium mine, an environmental review of the impact of the Liard Highway and advice on caribou concerning special land use conditions.

The division has helped prepare terms of reference for environmental studies associated with hydrocarbon and mineral development and guidelines for the development of environmental impact studies. Further advice was also provided concerning environmental aspects of hydrocarbons and mineral exploration and development, granular resource use and water utilization.

Plans for 1979-80

Assistance will be provided to the Northern Pipeline Agency on development of the environmental terms and conditions for the Alaska Highway pipeline. The division will review environmental impact statements for the Arctic Pilot Project, the Dempster Highway lateral pipeline, the Polar Gas pipeline, and possibly the Foothills oil pipeline proposal. Environmental design evaluation for the Liard Highway will continue.



Smoke jumper in action - Fort Simpson

Environmental Studies Division

Twenty-eight maps of the Land Use Information series were published covering the Bear-Slave Uplands between Yellowknife and Coronation Gulf. Field work was carried out in the southern part of Keewatin to update existing maps from that area.

Experimental and survey work on disposal of drilling fluids was continued. Monitoring of thermal changes at drilling sumps on Cameron Island and in the Mackenzie Delta was completed. Experimental surface disposal started at a site in the Mackenzie Delta and decanting at a Yukon site. Samples of soil and vegetation were taken from many old well sites to investigate residual toxicity where various methods of disposal had been used. The first of a series of reports was published.

Work on the development capacity of northern lake basins continued in the Yellowknife area and at Schefferville in northern Quebec. Recommendations arising from this work were used in planning subdivisions near Yellowknife.

A study, jointly funded by DIAND and DSS on the effects of siltation on northern lakes, was completed.

Experiments using plans from the Smoking Hills, Cape Bathurst, to revegetate mine wastes at several sites in the Yukon and at Sudbury, Ontario, have been successful. Commercial seed viability work will be completed in 1979-80 and the project handed over to industry for production and application. A bibliography on reclamation and revegetation has been published and production of the series "Ecological Bibliography of the Arctic Islands Archipelago" continued with Volumes V and VI. A manual on the construction and operation of winter roads was published.

A report on the effect of seismic exploration, especially the effects of explosions, on muskrats in the Mackenzie Delta will be published. A project to estimate the effects of seismic lines on animal migrations and trapping returns has been completed.

Hydrologic measurements were taken on selected streams along the Liard Highway alignment, to develop culvert designs that will ensure fish can pass. A study to determine the success of culverts installed to allow fish passage found that fish spawning migrations had occurred in three selected streams.

A study to evaluate the changes in the thermal regime following highway construction continued at a site near Wrigley. In the Mackenzie Delta area, hydrology studies were continued along the proposed highway alignment.

A literature review study on the Bathurst Caribou herd was initiated with the cooperation of the Northwest Territories Wildlife Service.

Plans for 1979-80

The environmental studies in the Liard and Mackenzie Delta regions will continue. Further survey work on the Bathurst Caribou may be initiated.

Offshore Environment Division

Continued implementation of the Eastern Arctic Marine Environmental Studies (EAMES) Program was the major responsibility of the division. Studies were initiated for northern Baffin Bay and others completed for the southern Davis Strait area. The environmental impact statements for Davis Strait and Lancaster Sound were reviewed and the division was involved in public hearings under the Federal Environmental Assessment and Review Process. Draft contingency plans and outlines of the environmental follow-up studies in the Davis Strait were developed. EARP Panel reports on the Davis Strait and Lancaster Sound were reviewed and departmental responses recommended.

The EAMES Advisory Board met several times during the year and visited the Southern Beaufort Sea offshore drilling operations. It prepared a report of the Davis Strait EAMES projects.

The Ikaluit Laboratory in Frobisher Bay, completed and opened to support EAMES projects, was used to capacity during the field season. During the winter period the facilities were for educational purposes in cooperation with local schools.

In addition to the EAMES program implementation, the division provided advice to the Arctic Waters Advisory Committee (AWAC) on monitoring programs in southern Davis Strait. It also provided advice on aspects of the Beaufort Sea drilling operations and the Nanisivik Mine Marine Environmental Monitoring Program.

Contacts were maintained with native groups and Canadian representatives on the International Whaling Commission to discuss native harvesting of whales. Research contracts were issued to obtain historical information on the use of whales by northern natives.

Plans for 1979-80

Implementation of the EAMES Program in the Baffin Bay-Lancaster Sound area will be the primary task.

The division will also help AWAC develop environmental operating conditions for Davis Strait drilling.

The Ikaluit Laboratory will be modified and expanded to provide a more efficient service.

Northern Non-Renewable Resources Branch

Responsibilities

The Oil and Gas Lands Division manages government's proprietary interest in oil and gas. It is responsible for sales of oil and gas rights, issuing permits and leases, maintenance of a registry of oil and gas rights, and surveillance of royalty and other revenue functions directly resulting from oil and gas operations.

The Oil and Gas Resources Evaluation Division does economic and geological appraisals of individual parcels and evaluates oil and gas potential in the North. It assesses exploratory programs, receives and maintains technical data from these programs, maintains a library of exploration reports, and processes the geoscience data to provide information on potential reserves and land values.

The Oil and Gas Engineering Division is responsible for departmental activities that control drilling and production techniques to protect against blowouts. The division ensures that maximum economic recovery of oil and gas is achieved, and proper sharing occurs between the various producers. It also makes sure that all underground fluids not produced are confined to where found. The division ensures recovery enhancement programs are instituted and that adequate gas and oil treatment plants are built. It is responsible for prevention of pollution from drilling and for the safe gathering, storing and transmission of oil and gas and by-products produced from Canadian lands in the Territories and adjacent offshore areas. It also monitors safety practices in drilling producing operations and coordinates activities with agencies responsible for activities related to drilling and production operations.

Review 1978-79

Expenditures by industry on oil and gas exploration in the Yukon and Northwest Territories exceed \$300 million in 1978, \$60 million more than in 1977. Exploratory and development drilling expenditures decreased by five per cent to \$200 million while total geological and geophysical expenditures decreased five per cent to \$50 million.

There was very little geological and geophysical work on the exploration field during 1978. Petro-Canada carried out four geological crew months of exploration in the Richardson Mountains.

A total of 18 seismic crew months, concentrated in the Arctic Islands and Mackenzie Delta, were reported in 1978 – a decrease of 35 per cent from 1977. Detailed seismic work was carried out by Imperial Oil Ltd. and Petro-Canada in the Mackenzie Delta. In the Arctic Islands, a major seismic program was continued by Panarctic Oils Ltd. on behalf of the Arctic Islands' exploration group. The surveys covered 3 260 km, a decrease from the four previous years.

Marine seismic surveys were carried out by Dome Petroleum Ltd., Imperial Oil and Canadian Superior in the Beaufort Sea and by Petro-Canada in the Baffin Bay – Davis Strait areas. Participation-type marine seismic surveys were carried out by Geophysical Service Inc. in the Beaufort Sea. Other marine surveys in the Davis Strait area were deterred by severe ice conditions. A total of 12 043 km were covered in 1978 – a slight increase from 1977.

Three major gas discoveries were made in the Beaufort Sea and two oil shows were recorded in the same area.

The gas discoveries were made at Dome Gulf et al Ukalerk 2C-50 and Hunt Dome Kopanoar M-13 in the Beaufort Sea, by Imperial Oil at Imp. Isserk E-27 and by Sun Garry G-07 in the Mackenzie Delta and at Columbia et al Kotaneelee YT E-37 in the Liard Plateau of the southern Yukon Territory.

In the Arctic Islands, Panarctic drilled an extension to the Drake Gas Field at East Drake F-76.

Drilling activities continued to decline in 1978. Nineteen wells were drilled for a total of 54 689 m consisting of 15 exploratory and four development wells. The bulk of this activity took place in the Arctic Islands.

Arctic Islands

Panarctic successfully achieved the first sub-sea completion in the Arctic at their gas well Panarctic East Drake F-76. The well flowed from the offshore location through a flowline to shore on the north-east coast of Melville Island.

Beaufort Sea

Dome/Canmar, with a fleet of three drillships, had its most prolific season to date. Kopanoar M-13 was deepened to 4 295 m from 2 555 m. Ukalerk 2C-50 was drilled to 4 924 m. Both wells had gas shows and will be tested early in the 1979 season. Three wells were suspended for further drilling, including Natsek E-56 (2 679 m), Nerlerk M-98 (545 m) and Tarsiut A-25 (432 m). The Kaglulik A-75 well was abandoned due to mechanical problems.

The drilling season has been extended through use of the icebreaker *John A. MacDonald*. Dome/Canmar hopes to make use of a fourth drillship in the summer of 1979.

Mackenzie Delta

Imperial Oil completed the first phase of its artificial island location at Issungak M-61, located just north of the Isserk island in 18 m of water. Present plans are to complete construction of the island this summer in order to meet a spud-in date for a well in November, 1979.

Yukon

Columbia Gas is nearing completion of the Kotaneelee Gas Field development, including a water injection well, a gas plant and pipeline.

Environmental and engineering research projects were continued and new projects initiated in the Davis Strait area. The Arctic Petroleum Operators Association initiated five projects, mainly in ice mechanics and ice defense systems. Imperial Oil, Aquitaine and other operators continued major environmental projects in Baffin Bay.

In November 1977, the Minister announced the establishment of an environmental study into offshore areas in the eastern arctic. The object is to provide sufficient data to grant or withhold exploratory drilling permits in the area. The program is known as the Eastern Arctic Marine Environmental Studies or EAMES. The waters off the east coast of Baffin Island are of principal interest since they cover rock formations which may be rich in oil.

Other important areas are Lancaster Sound, Baffin Bay and Davis Strait. The research is expected to take four years, but in view of the urgent need for oil, every effort is being made to reduce this time. Some industry studies have already been completed.

The federal departments of EMR, DFE and DIAND will be involved, with the management committee under the chairmanship of DIAND. The work itself however, will be the responsibility of industry. The federal departments will cooperate with any facilities or studies they can provide. As much use as possible will be made of local Inuit knowledge and skills. Native people of the eastern arctic will be included and actively involved in the planning and conduct of the studies. In addition to four specialists familiar with the coastal and offshore environment and two representatives of the petroleum industry, an Advisory Board set up to assist the Management Committee will also include local and native representatives from 10 communities in the area.

All environmental elements of the area are included in the program: wildlife, climate, fresh and salt water areas, ice conditions, waves and currents, the effects of oil spills and techniques developed to deal with them.

The program will be funded by the federal government and private industry, with industry bearing the heaviest share. Costs are anticipated to be well in excess of \$12 million.

Oil and Gas Land Management

Land Activities during 1978 continued under authority of the Canada Oil and Gas Land Regulations. Although proposed legislation (Bill C-20, the Canada Oil and Gas Act) was tabled before Parliament in December, 1977, the legislation was not passed before the summer recess. A new bill is awaiting re-introduction.

Amendments to the Canada Oil and Gas Land Regulations made in 1977 had an impact on land holdings. Since no new disposals of oil and gas rights were held during the year, the total area held under leases and permits declined by about 20 per cent from 1977 levels.

In part, the decrease reflects a concentration of exploratory effort into more expensive, less accessible prospective areas. Continued interest is being shown offshore of the Mackenzie Delta, the Beaufort Sea, the arctic islands and eastern arctic offshore areas.

The amendments to the Regulations in 1977 provided options for holders of lease applications and expiring permits. At the end of 1978, the option period had expired, resulting in the issuance of about 1 000 lease documents, some of which

had been on hand since 1972. As well, six leases containing drilling commitments were issued during the year to operators conducting exploratory or delineation drilling on Crown Reserve areas adjacent to existing leases. Under its acreage selection option provided by the amended Regulations, Petro-Canada selected about 11 million ha in Davis Strait and Baffin Bay and 1.8 million ha in the Arctic Islands to be held under exploration agreements. Although a preliminary selection was also made for areas in the western arctic, the Minister announced in May, 1978, that disposals in that region would be deferred for one year to encourage discussions respecting native claims.

Number of Issued Permits and Leases and Relevant Areas

Area	Permits	Hectares
NWT Mainland	512	9 705 693 ha
Yukon Mainland	136	2 045 913 ha
Arctic Islands	2 783	55 077 808 ha
Arctic coast Marine	525	9 485 373 ha
	3 956	76 303 787 ha

Area	Leases	Hectares
NWT Mainland	996	2 470 929 ha
Yukon Mainland	142	211 926 ha
Arctic Islands	150	370 297 ha
Arctic coast Marine	47	128 172 ha
	1 335	3 181 324 ha

Revenues Received, 1978 (Calendar Year)

Yukon Territory	Revenues
	\$
Permit fees	Nil
Transfer fees	290
Lease fees	320
Rentals	337 082
Forfeiture	1 846
Bonus	Nil
Royalties	6 710
Total	346 248

Northwest Territories	Revenues
	\$
Licence fees	2 100
Permit fees	Nil
Transfer fees	25 550
Lease fees	2 600
Rentals	3 989 061
Forfeiture	270 552
Bonus	Nil
Misc.	4 799
Royalties	4 337 466
Total	8 642 138
Total for Territories	8 988 386

Parliament has passed legislation clearing the way for construction of the Canadian segment of the \$10-billion North Slope gas-pipeline system.

The legislation ratifies the Canada-U.S. transit agreement reached last year and approves establishment of a northern pipeline agency along with a special pipeline committee to monitor construction and assure that native land claims are not jeopardized.

Calgary-based Foothills Pipe Lines (Yukon) Ltd., expects to start construction on the \$4.4-billion Canadian section through the Yukon in 1982.

In 1979, drilling is expected to continue in the offshore Beaufort Sea at a further six locations. An \$80 million two-year SunArctic drilling program operated in the Arctic Islands by Panarctic Oils, involves six companies. This operation began in late 1977. A total of 25 wells, both onshore and offshore, may be drilled.

Exploration activity is expected to decline further in 1979 because of the need to complete environmental surveys before proceeding with drilling in the Lancaster Sound. Seismic programs in marine areas are being deferred until some drilling is carried out. Because of the high cost of the Dome offshore wells and escalating costs for activity in the frontier regions, expenditures are expected to drop less in 1979 than in 1978. However, the number of wells and seismic crew months will decrease substantially.

Mining Division

Responsibilities

This division administers mining and mineral rights (excluding oil and gas) from the time a claim is acquired through to production. The division comprises three sections - Mining Lands, Mining Resources and Mining Engineering.

Mining Lands Section

For administrative purposes, the territories have been divided into seven mining districts. A mining recording staff is responsible for the disposition of mineral rights within each district. For each territory, there is a supervising mining recorder, who ensures uniform practices are observed in the administration of the various mining acts and regulations.

Mining Engineering Section

This section gives advice on the Mining Safety Ordinances and Mining Safety Rules and Regulations as well as the Blasting Ordinance and Regulations in the Yukon and the Explosives Use Ordinance in the Northwest Territories. It also prepares new safety legislation when required.

Regional mining engineers are stationed at Whitehorse and Yellowknife. This senior mining engineer has a staff of a district engineer, electrical-mechanical engineer, environmental engineer, mine rescue superintendent, claim inspector and a clerk. They are responsible for inspection of mines, quarries and blasting operations to ensure compliance with safety legislation; inspection of mineral claims to ensure compliance with the Yukon Quartz Mining Act, the Yukon Placer Mining Act and the Northwest Territories Canada Mining Regulations; ensuring that sufficient mine personnel are trained in mine rescue, recovery operations and first aid; conducting ventilation and dust surveys, monitoring radioactive contamination, and carrying out environmental studies of all underground and surface mining properties.

Mining Resources Section

This section provides a geological information and advisory service to the mineral industry in the North. Offices are maintained at Whitehorse and Yellowknife.

Two core libraries, the H.S. Bostock library at Whitehorse and the C.S. Lord library at Yellowknife, preserve diamond drill core data. Each has laboratory facilities for core splitting, diamond-saw cutting, thin-section preparation and core storage.

In cooperation with the Geological Survey of Canada, the Yukon Chamber of Mines and the Northwest Territories Chamber of Mines, geoscience forums were held in the fall of 1978 at Whitehorse and Yellowknife.

Regional and district geologists carry out mineral property examinations, collect rocks and mineral specimens and advise the mineral industry, government departments and research scientists on geological problems.

Department geologists assist prospectors and other geologists in identifying rock and mineral specimens by giving prospector training courses and preparing geological compilation maps on mineralized areas.

Mining Production

Yukon Territory

Review 1978-79

Mineral production came from five mines producing zinc, lead, asbestos, silver, copper, gold and coal. Some tungsten was also recovered from placer operations. The value of mineral production is estimated at \$228 176 000, up nine per cent from \$209 460 113 in 1977. Lead and zinc accounted for 62 per cent of mineral production. There were 1 283 persons employed by the producing mines and an additional 215 persons were employed in placer mining.

Cassiar Asbestos Mining Corporation ceased operations at the Clinton Creek Mine in August. A total of 689 787 t of ore were milled during the year, down from 1 207 151 t in 1977. The mine employed about 254 workers.

United Keno Hill Mines Ltd. continued to produce from six underground mines and from the Birmingham open pit. Exploration extended the mine's life to 1982. Production decreased to 81 893 t from 83 908 t in 1977.

Tantalus Butte Coal Company operated intermittently during the year partially due to a fire in the underground mine. All underground operations were terminated and emphasis was put on extracting the coal needed from the open pit operation.

Approximately 19 091 t of coal were produced by a workforce ranging from one to 14 persons. An average of eight persons were employed during the year.

Cyprus Anvil Mining Corporation increased the number of tonnes milled by five per cent to 3 276 971 t over the previous year to almost 225 million kg of lead and zinc combined. The company announced its intention to buy several ore deposits in the Anvil area which will extend the life of the mine into the next century.

Whitehorse Copper Mines Ltd. continued to mine from its underground mine near Whitehorse milling 784 629 t, a decrease of 30 000 t over the 1977 rate. Exploration in the Whitehorse Copper Belt failed to make any substantial additions to the company's ore reserves.

Yukon Mineral Exploration

Review 1978-79

Exploration in the Yukon for 1978 was at a level similar to the previous year. Over \$18 million was spent by more than 100 companies. Exploration targets have changed somewhat over the last few years with more emphasis on uranium, tin, tungsten, and molybdenum. Lead-zinc exploration was maintained at the high 1977 levels while little effort was expended on copper exploration. In 1978 there were 9 740 quartz claims registered, 1 079 placer claims, 222 placer leases and royalty was paid on 801 848 g of gold.

Lead-Zinc-Silver

The Selwyn Basin continued to be the prime focus for lead-zinc-silver exploration this year. In the MacPass area, Hudson Bay Exploration and Development Company Ltd. drilled 587 m on the TOM deposit and carried out a gravity survey. The Ogilvie Joint Venture continued drilling the JASON property. These properties contain similar layered Pb-Zn-Ag-barite mineralization. Canadian Nickel Co. drilled 587 m on the HASTEN, BASIN and FETCH claims and Archer, Cathro and Associates Ltd. drilled on the ESS groups. Placer Development Ltd. drilled 5 458 m on the ANNIV claims in the Howards Pass area. Cominco and Brinex were also active. Utah Mines Limited carried out a major program of geological mapping and diamond drilling on the MAXI claims. The MAXI consists of concordant lenses and layers of galena-sphalerite within metamorphosed shale of the Road River Formation. In the same general area, southeast of Ross River, Cominco staked claims and carried out geochemical and geophysical work. In the Pelly Banks area there was considerable activity. Kerr Addison Mines drilled several holes on the BLACK claims and the Pelly Banks Syndicate drilled four holes for 229 m on the SHALE-RENO groups to test EM conductors. On the EAGLE and FRED claims a heli-borne EM-Mag survey and trenching were carried out. A small showing of sphalerite-galena in chlorite schist was found on the EAGLE group. Dupont of Canada Exploration had a drilling program of 305 m on the CZAR and LEACH groups and conducted a heli-borne EM-Mag survey over the LEACH-FAULT-CZAR-PATCHES and GAL groups. In addition, the sparse outcrops in this overburden covered area were mapped, and a gravity survey was conducted. Minor amounts of zinc mineralization were found in graphitic phyllite. Dupont continued the heli-borne surveys to include a portion of the T group adjacent to Ross River.

Across the Tintina Trench from Ross River Welcome North Mines Ltd. continued work on the stratabound zinc-lead showings in the St. Cyr Range. This work consisted primarily of geological mapping, geochemical sampling and some Max-Min EM surveys. A considerable amount of trenching was done on the ANGIE claims where smithsonite, sphalerite and pyrite are found as fine-grained stratiform disseminations and fracture fillings in black carbonaceous limestones and calcareous silt-stones. On the DEV claims galena is found associated with iron and manganese rich sediments. On the PMJ claims the JA showing consists of layers of sphalerite within an argil-

laceous limestone. The SUNSET showing contains galena and sphalerite within an iron-manganese-rich bed. St. Joseph Explorations carried out some geological and geochemical surveys on the TOM and BOB claims in the Ross River area. In the central Pelly Mountains, exploration for sulphide deposits was carried on at a much reduced scale from the previous year. Newmont Exploration of Canada drilled six holes on the CYR group and three holes on the JOE group. In the Watson Lake area, St. Joseph Explorations drilled seven holes for 1 050 m on the MEL lead-zinc-barite property. The ore reserves of the deposit were expanded to 3.6 million tonnes of 1.93 per cent Pb, 5.20 per cent Zn and 61.4 per cent barite. Mineralization is in a barite horizon containing coarse-grained galena-sphalerite localized between Lower Cambrian limestone and Ordovician shale.

The Anvil Area was active again this year. Cyprus Anvil Mining Corp. conducted an extensive program by drilling 11 holes to the 550-610 m depth on the DY deposit. This Zn-Pb deposit seems to be more volcanogenic in origin than others in the Anvil district. Cyprus Anvil geologists continued their regional geological mapping in the district. On the north Anvil Range, Giant Yellowknife Mines drilled four holes on the KD group without finding any significant mineralization. Amax Minerals Exploration, in a joint venture with Union Oil Company of Canada continued geological, geophysical and geochemical exploration on its large claim blocks in the Tay Mountain area. At the extreme north end of the Anvil belt, Conwest Exploration Co. drilled 17 holes for a total of 2 530 m on the SUE claims. Welcome North Mines and Getty Mines Limited conducted a small amount of geophysical and geological work on claim groups in the Anvil belt. Preussag Canada Limited drilled two holes on the CAT claims.

In the area northeast of Mayo, Pan Acheron Resources drilled 22 holes for a total of 1 555 m in a dolomite breccia with lead-silver-zinc mineralization. Prism Resources has located vein type silver-lead-zinc mineralization in the Road River shale. The best drill intersection was three m of 274 g Ag/tonne and 4.3 per cent Pb-Zn.

Dejour Mines conducted a geochemical survey on the GLEN claims. Rio Alto Exploration continued exploration on its property near the Alaskan border.

Several zinc-lead skarns were investigated this past summer. Prospectors Don Lampert and Stanley Pratt discovered a new showing near Becker Creek on the Wheaton River and staked the RIDGE claims. United Keno Hill Mines discovered a similar type of skarn near Primrose Lake. It is still open to question whether these are tectonic or the mineralization is an original constituent of the metamorphic schists. D.C. Syndicate has outlined zinc bearing skarns on the GULL and SKARN claims. Welcome North Mines Limited has located several conformable calc-silicate skarn zones with sphalerite and galena mineralization on the MAY groups.

Iona Silver Mines, located in the Ketza River Valley, carried out work on two vein systems. On the K-18-B vein a 3.6 m x 3.6 m vertical raise was driven 6.4 m from the 700 level towards the 800 level. Assays on the 6.4 m averaged 537 g/tonne Ag, and 12.40 per cent Pb across 2.4 m. A portal site was prepared at the 75.7 m level with plans to drive a 183 m cross-cut to the A-1 vein. In addition, 10 holes were drilled and some CEM horizontal shootback surveys were conducted.

Amoco Canada Petroleum Co. had a major program of drilling on the BUG and GUB claims on Red Mountain. Five holes for a total depth of 1 920 m have been drilled to date. Most of these are long holes over 305 m in depth. Widespread molybdenum mineralization has been outlined. An IP survey was also conducted over the claim groups. Amax Minerals Exploration drilled 19 holes for 4 176 m on the Logjam Creek property on the Yukon-B.C. border, where it has outlined a large porphyry system containing molybdenum and scheelite in a quartz vein stockwork.

Tungsten

Tungsten exploration was very active in 1977 with several companies and joint-ventures in the southeast Yukon. Some new ideas and models on formation and localization of tungsten deposits, as well as high tungsten prices, account for the significant increased exploration. North of Watson Lake, several new and old occurrences were examined by various companies. Placer Development and Essex Minerals had a major program of mapping, geophysics and 3 292 m of drilling on the CLEA-OMO property, a scheelite bearing calc-silicate skarn located at the contact of a Paleozoic limestone and a granite stock. In Dublin Gulch, northwest of Keno Hill, scheelite is found in a calc-silicate skarn adjacent to the Potato Hills stock. It also occurs as a placer deposit in the stream channel; 4 537 kg of scheelite were produced in 1977. Canada Tungsten Mining conducted a churn drilling program on the gravels to assess the scheelite potential. West of Ross River, Risby Tungsten Mines conducted a program of trenching, geochemical and geological exploration on the CAB claims where scheelite is found in high grade gneisses and calc-silicate horizons.

In the Mayo area, CCH Resources, conducted an extensive program of geological and geochemical exploration on several properties where cassiterite and scheelite mineralization has been discovered in stockworks, fracture fillings and greisen bordering quartz veins in the Keno Hill Quartzite. On the north side of Dublin Gulch at Tin Dome, tin mineralization occurs within fine-grained massive tourmaline alteration zones associated with quartz veins and adjacent to a large area of breccia. In the Swift River area, considerable ground was staked in the early summer by Dupont of Canada Exploration, with Duval International Corp. as joint venture partner. D-C Syndicate, Amax Minerals Exploration and Welcome North Mines Limited were also active in claim staking and exploration in the area. Cassiterite has been found in greisen zones, stockwork veins, and breccia pipes within the area mapped as the Seagull Batholith.

Uranium

In the Quartet Lakes area Pan Ocean Oil Limited and Mountaineer Mines Limited conducted a drill program on the LOON and DEER claims. Uranium occurs as brannerite associated with a quartz vein swarm and a feldspathized alteration zone on the LOON. On the DEER, secondary uranium minerals have been found in siltstone. In the Tombstone Mountains, minor trenching and geological work was carried out by Urangesellschaft Canada and Archer, Cathro and Associates. Here uraninite and secondary uranium minerals are associated with the tinguaitite phase of an alkaline intrusion. Aquitaine Company of Canada continued to work on its claim groups in the Blow River area of northern Yukon where uranium anomalies have been located in sedimentary rocks. E & B Explorations conducted geochemical and geological surveys for uranium on a number of small claim blocks south of Whitehorse and Bethle-

hem Copper Corp. staked 194 claims in the Matson Creek area where there is potential for uranium. Eldorado Nuclear worked on its claims groups near Isaac Creek, northwest of Carmacks. There was a considerable amount of regional uranium exploration by the following companies: Eldorado Nuclear, Cominco, Mattagami Lake Mines, Agip Canada Ltd., Urangesellschaft Canada, Hudson Bay Oil and Gas Co., Union Carbide Canada Mining and E & B Explorations.

Copper

There was little exploration that was solely directed at copper. Whitehorse Copper Mines Limited continued work on the ACME-HOP group by drilling four holes and conducting 40 km of ground magnetometer surveys. Chalcopyrite and pyrrhotite is conformably localized along a marble-schist boundary. Only weak mineralization was intersected in two of the holes. In the Whitehorse Copper Belt it undertook a large program of IP and drilled four holes. Riocanex drilled 762 m on the LUCKY JOE prospect and three holes intersected low grade copper mineralization in quartz mica schist. IP and magnetic surveys were conducted by the company on similar copper occurrences on the nearby SPIKE and LIL claim groups. The Loon Lake Syndicate trenched on the LYNX claims where chalcopyrite and pyrite are found in quartzite adjacent to the quartzite-schist contact.

Precious minerals

Northwest of Carmacks, Anglo American Corp. of Canada drilled 490 m and dug numerous cat trenches of the SAM claim, a gold-silver prospect. Yukon Revenue Mines Ltd. trenched a gold-silver-tungsten prospect in the Revenue Creek area.

Placer operations have been greatly stimulated by the rise in the price of gold. Essentially all likely available ground has been staked in placer claims or placer prospecting leases. Presently there are nearly 5 000 claims and 300 leases in good standing. In 1978 there were approximately 75 full-time placer operations involving 200 people. Most are small family or partnership mining ventures. Additionally some 15 miners sluice for gold on a part-time basis. It is likely that scheelite and cassiterite will be recovered from some of the larger Klondike placer operations in the coming years.

The largest placer operations are those of Territorial Gold Placers on Henderson and Black Hills Creeks, Miben Mining on Hunker Creek, Oak Bay Manor Ten Mile Mining on Ten Mile Creek (Sixtymile) and Claymore Resource Limited on the headwaters of Ladue River in the Moosehorn Range north of Beaver Creek.

Coal

The Pan Ocean Oil Limited and Mountaineer Mines Limited joint venture had a 340 000 ha block of land in the Bonnet Plume Basin under coal leases. Coal seams have been located at several places. Geological mapping has been carried out on the leases and three holes have been drilled. These holes encountered coal seams ranging in thickness from 2 to 8.8 m at shallow depth. Preliminary analysis of this coal shows a low-ash thermal quality.

At the Tantalus Butte Coal Mine of Cyprus Anvil Mining Corporation a fire necessitated the sealing of the mine and all underground operations were terminated. However, open pit extraction produced 19 091 t of coal. In addition, some local exploration was carried out; 31 holes totalling 1 536 m were drilled with a rotary percussion drill and two bulldozer trenches were dug. In the Liard River Basin Placer Development was drilling for coal.

Northwest Territories

Mining Production

Production came from nine mines producing zinc, lead, gold, tungsten, silver, cadmium, copper and uranium. The value of mining production in the Northwest Territories in 1978 was in excess of \$365 million, up 24 per cent from \$294 840 585. Lead and zinc accounted for 66 per cent of the value of production in 1978. There were 1 733 persons employed by the producing mines and an additional 209 persons employed by contractors working at mine sites.

Canada Tungsten Mining Corporation commenced a mill enlargement program which will allow for a doubling of tonnage milled by mid 1979. In 1978 the mine milled 177 036 t to produce 2 891 681 kg of tungsten trioxide, an increase of 26 per cent over 1977.

Cominco Ltd. moved most of its services from C Shaft at the Con Mine to the Robertson Shaft as this new shaft became fully operational. The mine increased its gold and silver production to 3 560 946 g and 948 750 g respectively.

Giant Yellowknife Mines Ltd. continued to produce ore from open pits and underground. The number of tons milled dropped to 361 000 t, a drop of 11 per cent, due to a planned shutdown for one week for repairs and another week at one-half production because of a mechanical breakdown. The mine produced 2 967 678 g of gold and 759 392 g of silver in 1978.

Echo Bay Mines Ltd. doubled underground ventilation in the Eldorado Mine with the completion of 2.4 m diameter boreholes from surface to the ninth level and installation of a larger heated air ventilation plant. The number of tons milled increased by nine per cent to 33 889 t resulting in production of 71 531 767 g of silver and 237 868 kg of copper.

Terra Mining and Exploration Ltd. operated intermittently in 1978 due to lack of mill feed while construction of ventilation boreholes and production shafts was under way. The number of tons milled, at 26 427 t, was almost identical to 1977 production but the grade was much lower with 20 643 300 g of silver, 21 050 kg of copper and minor uranium being produced.

Norex Mines Ltd. produced ore during four months of 1978 which was milled at Terra. Although tonnage was down seven per cent the production of silver, copper and lead was up significantly to 23 969 539 g silver, 20 235 kg copper and 77 358 kg lead.

Northrim Mines Ltd. produced for the first five months of the year with production of 466 553 g silver from 3 763 t of ore milled.

Nanisivik Mines Ltd. increased production despite the loss of half a month's mill production due to a compressor fire. Production from 575 516 t amounted to 72 996 000 kg zinc, 7 239 000 kg lead, 235 601 kg cadmium and 29 950 804 g silver.

Pine Point Mines Ltd. continued to mine from various open pits with 25 days of production being lost due to the failure of the hydro plant. The tonnage milled was down eight per cent but the amount of metal produced was up significantly to 74 252 264 kg lead and 161 966 017 kg zinc.

Mineral Exploration

Mineral exploration in the Northwest Territories continued at a high level in 1978 with expenditures estimated at \$20-25 million. The continued decline in base metal exploration was offset by the increase in uranium exploration.

Uranium exploration was widespread in the territories with activity in virtually every geological province, from Baffin Island to the Gornby Basin, from the Nonacho Basin to the Kilohigok Basin.

Base metal exploration was centred around the Nanisivik Mine on northern Baffin Island and in the Pine Point district where recent successes by Western Mines Ltd. led to deep tests and widespread staking west of the Pine Point Mines property. Some exploration continues in the Hackett River-Izok Lake area, in the Gayna River area and in the shales in the Selwyn Basin in the Cordillera.

Precious metal exploration is limited to gold in the Yellowknife area and silver in the Great Bear Lake area.

Uranium

Arctic Islands Region

Esso Minerals Ltd. drilled 975 m on claims near Cape Dorset. Trigg Woollett Associates Ltd. mapped and prospected permits on Prince of Wales Island and prospected parts of north-western Somerset Island for Esso Minerals Ltd.

Keewatin Region

A Denison Mines Ltd. crew prospected claims in the Bate Lake area. P N C Exploration (Canada) Co. Ltd. explored the Cullaton Lake area with airborne and ground geophysical surveys.

A six-man crew from Esso Resources Canada Ltd. prospected the Angikuni and Mallery Lake areas.

Urangesellschaft Canada Ltd. had four crews in the Keewatin. A 30-man crew at UG Lake drilled 3 117 m in 20 holes and surveyed radioactive showings. Another 30-person crew at Pointer Lake did geochemical, geological and geophysical surveys on claims south of Schultz Lake. In July, 16 members of this crew mapped and surveyed new prospecting permits in the Whitehills Lake area. A 20-man crew at Lone Gull Lake drilled 37 holes (3 536 m) to test geochemical and geophysical surveys and staked claims in the Nowleye Lake, Marjorie Lake and Tehek Lake areas. Detailed radiometric, VLF-EM and magnetometer surveys were flown in the Tehek, Whitehills, Pointer, Sandhills, and UG Lakes areas.

Two Pan Ocean Oil Ltd. crews did geochemical, geological and geophysical studies in the UG Lake and P.O. Lake areas. The P.O. Lake crew drilled 42 holes totalling 3 048 m in radioactive showings north of Nutarawit Lake.

Noranda Exploration Company Ltd. had a four to six-man crew prospecting and Winkie drilling south of Nowleye Lake, while a second crew drilled in the Fox-Rak Lakes areas.

Three crews worked on Cominco Ltd. properties in the Keewatin. One crew, camped south of Nowleye Lake mapped, surveyed and prospected claim groups. A second crew spent one month flying geophysical surveys and mapping seven prospecting permits north of Angikuni Lake. A third crew flew surveys, prospected and staked north of Hoppner Inlet on Melville Peninsula.

Dolmage, Campbell and Associates, consultants working for E & B Exploration Ltd., prospected and drilled radioactive showings on claims south of Nowley Lake.

A 15-person Essex Minerals Company crew prospected and mapped claims north of Schultz Lake and prospected and sampled lake waters and sediments on new prospecting permits south of Garry Lake in July. Four persons from this crew prospected the Nicholson Lake permit in August and two prospected in the vicinity of Rak Lake.

Shell Resources Canada Ltd. eight to ten-person crews did detailed geological, geochemical and geophysical surveys on their prospecting permits east of Dubawnt Lake. Ten holes, approximately 762 m, were drilled on geophysical anomalies.

Comaplex Resources International Ltd., working for E & B Explorations Ltd., did airborne and ground geophysical surveys and prospected the areas east of Angikuni Lake and north of Thirty-Mile Lake.

A seven-man Western Mines Ltd. crew performed lake water and sediment geochemical surveys and scintillometer surveys on prospecting permits north of Aberdeen Lake. Airborne radiometric surveys were flown by Geoterrex on Western Mines Ltd. properties southwest of Amer Lake.

Uranerz Exploration and Mining Ltd. Amer Lake area claims were mapped and surveyed with airborne and ground geophysical instruments by a 15-person crew.

West Churchill District

Geochemical sampling and prospecting explored permit areas held by Urangesellschaft of Canada Ltd. near the Talon River.

Kelvin Energy Ltd. did ground and airborne radiometrics, geochemistry and geological mapping of a radioactive syncline on the KEE claims near Louison Lake.

Uranerz Canada Ltd. staked and evaluated several claim groups near Heron and Powder Lakes. Several groups of claims were staked to cover Nonacho Group conglomerates around Thekulthli Lake by P N C Exploration (Canada) Co. Ltd. and Saskatchewan Mining Development Corp. The latter also examined showings in the Tazin gneisses and metasediments near Hill Island Lakes and completed geochemical surveys in its Scott Lake area permit.

East Arm Subprovince

Chevron Standard Ltd. prospected around MacDonald Lake near Snowdrift. Giant Yellowknife Mines Ltd. staked the MP claims near Reliance and Seru Nucleaire (Canada) Ltd. drilled a uranium prospect on the south shore of Prebble Island.

Highwood Resources Ltd. and the A.A.U. Syndicate prospected parts of the Blachford Lake intrusive complex. Highwood Resources was drilling zones containing uranium, thorium and niobium. Five holes had been completed by November 1.

Bill Rossing of Yellowknife prospected for uranium at McKinley Point.

Pacific Copper Mines Ltd. explored claims near Buckham Lake and contracted Kenting Earth Sciences Ltd. to conduct airborne surveys in that area.

Bear Province

As many as 65 persons worked out of a large BP Minerals Ltd. base camp at Beep Lake mapping numerous claims groups. Permit areas were explored. Radiometric surveys followed when geological findings required them. The Aphebian Helikian unconformity was the main zone of interest. BP drilled 10 holes on the TIM and JEFF claim blocks, 17 holes on the LAC and JEN claims, and two holes on the PAT claims.

Chevron Standard Ltd. worked in the western half of its large WOP claim block. During 1978 work included mapping and soil sampling.

Eldorado Nuclear Ltd. in joint venture with Imperial Oil (Esso Minerals Canada) extended a 1977 lake sediment and water survey northward along the western margin of the Bear Province, to cover on the Leith Peninsula, previously held by Noranda Exploration Company. Some geological anomalies were tested. The MAZ group was mapped and prospected geochemically.

Cominco Ltd. drilled nine holes on the PEC group. Seven holes totalling 1 203 m were drilled on the RAH group. Mapping, prospecting and VLF surveys covered parts of the RAH claims and the nearby FAR, HOT, WET and DRY claims.

Cominco Ltd. flew airborne radiometric surveys over eight areas underlain mainly by Helikian rocks in the Bathurst Inlet area. A 14-man crew, based at Buchan Bay, did reconnaissance mapping, prospecting and ground follow-up of these areas. Farther to the south in the Bathurst Inlet and Bathurst Lake areas, radiometric surveys tested parts of the HCW and POMIE groups.

Gulf Minerals Ltd. mapped and soil sampled its prospecting permits VLF EM and IP surveys were done on two grids, one of which lies east and the other northeast of Dease Lake. Pitting tested areas of anomalous radioactivity.

Imperial Oil Ltd., Esso Minerals (Canada) Division drilled more than 15 holes on the YUK claims and five on the adjoining ML group to delineate a uranium bearing zone in Helikian sediments; 30 holes were drilled on the two maps.

Hudson Bay Oil and Gas Company Ltd. did detailed mapping of claim groups and IP surveys of selected areas.

Hudson Bay Oil and Gas flew airborne radiometric surveys over all claim groups and over its prospecting permits.

Reconnaissance mapping of surficial deposits covering the Hornby Bay and Dismal Lakes groups was done over a wide area.

Major Resources Ltd. drilled a uranium project at Beaver lodge Lake.

Noranda Exploration Co. Ltd. drilled one hole on the MAR Claims in the Mazenod-Faber Lakes area.

Uranerz Exploration Co. Ltd. mapped and flew helicopter borne radiometric surveys over numerous claim groups. These surveys were followed by ground EM in some cases.

Rayrock Resources Ltd., in joint venture with Nitsubishi Metal Corporation, flew fixed wing radiometric surveys of areas selected by a 1977 reconnaissance. Work included mapping and some ground follow up.

Base Metals

Arctic Islands

At Hawker Creek, Shell Canada Resources Ltd. prospected, mapped, drilled and did pulse EM surveys over the TR claims optioned from Global Arctic Resources Ltd. Nanisivik Mines Limited outlined a promising zone beneath the western end of its ore body and drilled the Shale Hill and K baseline anomalies.

Canadian Superior Exploration Ltd. did reconnaissance mapping of prospecting permit areas in the Cornwallis Lead-Zinc District.

Keewatin Region

Aquitaine Company of Canada Ltd. drilled six holes totalling 762 m to test geophysical anomalies in the McConnell River area.

Gulf Minerals Canada Ltd. did ground EM and magnetometer surveys, geological mapping and drilled 32 holes totalling 3 616 m in the Rochon Lake area.

West Churchill Region

Bill Rossing prospected in the Thubun Lake Area for base metals.

Interior Plains

Pine Point Mines Ltd. continued to explore and develop its claims in the Pine Point region. During the first half of 1978 additions to ore reserves replaced ore mined. A huge block of ground with potential for lead-zinc mineralization was staked west of Hay River as part of a joint venture with Cominco Ltd.

Western Mines Ltd. did IP surveys and over 15 240 m of drilling on its Slave Reef Project holdings.

Gulf Minerals Canada Ltd. drilled a 610 m hole and staked 400 km² near Hear Lake.

IP surveys were done by Cominco Ltd. at the QUITO claims and by Pine Point Mines Ltd. at Windy Point.

Nahanni Region

Welcome North Mines Ltd. mapped and prospected shales of the Besa River and Road River Formations from south of Skinboat Lakes north to Glacier Lake and to the South Nahanni River as part of their Selwyn Basin Project. Massive strata-bound sulphides carrying lead-zinc were found immediately north of Nahanni Park.

St. Joseph Exploration prospected west of Skinboat Lakes.

Nahanni Placers and Cambria Explorations prospected and took rock geochemical samples along the Caribou Range and reconnoitered the MacMillan Lake area and some tributaries of the Flat River.

Diapros Ltd. surveyed and prospected stream sediments of part of the Interior Plains from south of Wrigley to north of Norman Wells.

Giant Yellowknife Mines Ltd. prospected carbonates of the Mount Kindle and Franklin Mountain Formation just north-east of Wrigley.

Canada Tungsten diamond drilled geophysical anomalies on the Baker prospect, just north of Tungsten.

Union Carbide mapped in detail, geochemically surveyed and drilled several tungsten bearing skarns on the NIP claims.

Canex Placer and US Steel Western Hemisphere Ltd. continued diamond drilling lead-zinc deposits on the claim groups at Howard's Pass.

Hudson Bay Mining and Smelting prospected shales of the Selwyn Basin just east and north of MacMillan Pass and reconnoitered the MacMillan Lake area.

Canico mapped, geochemically surveyed and prospected permits.

Rio Canex continued prospecting, detailed mapping and geophysical surveying of the RT claims on the Gayna River.

Slave Province

Cominco Ltd. drilled three holes (1 015 m) on the PALE claims. Soils on the PALE and MINOV claims 3 km to the southeast were sampled.

Hudson Bay Oil and Gas Ltd. drilled four holes on the KEY claims, one on the HOK, one on the SOL, and one on the JAN claims.

St. Joseph Exploration Ltd. explored claim groups near Victory Lake where it drilled a number of holes.

Getty Minerals Ltd. continued to explore in the Aylmer Lake area.

Texas Gulf Inc. ground checked anomalies detected by a 1977 airborne EM and magnetometer survey of prospecting permit 465 and of 150 claims in NTS. Reconnaissance mapping geochemical and geophysical surveys were on a much reduced scale compared with 1977 as only 12 persons worked on the project.

Precious Metals

Keewatin Region

The Keewatin Joint Ventures comprising Essex Minerals Company, Penarroya Canada Limitee, Aquitaine Company of Canada Limited, Rexomines Limited and Serem Limitee, drilled six holes on a gold showing at the north end of Turquetil Lake.

O'Brien Energy and Resources Limited had a small maintenance crew at its Cullaton Lake gold deposit. Anomalies detected south of the deposit by EM and magnetic surveys flown last year were staked and surveyed with magnetometer.

Nahanni Region

Prospector E. Linberg tested several gravel bars for placer gold on the Liard River between the Blackstone and Netla Rivers.

R. Turner prospected for silver around Mitchner Lake and Spruce Lake.

Slave Province

A small Strike Lake Resources crew produced a few hundred ounces of gold alloyed with silver from quartz veins on the JOON claims near the old Beaulieu River mine.

At Yellowknife Cominco Ltd. continued surface and underground exploration at the Con Mine and drilled nine holes on the nearby KAMEX claims. Also in the Yellowknife area, Giant Yellowknife Mines Ltd. explored on the surface and underground at the Giant and nearby LOLOR mines and surface holes were drilled on the Supercrest property, four holes on the Northbelt Yellowknife Mines property and six holes on the Lynx property. Giant drilled three holes on the YT claims south of the Con Mine.

Perry River Nickel Mines drilled on the TONY BLAKE DW groups in the Courageous Lake volcanic belt. The TONY and BLAKE claims were geophysically and geochemically surveyed.

Bear Province

Echo Bay Mines Ltd. drilled several thousand feet in the Eldorado Mine, 26 holes on the ST. PAUL and BONANZA claims on the Dowdell Peninsula and 19 holes on the CBB, LEN and PAUL claims in the Contact Lake area.

Sunshine Mining Company drilled nine holes on the LEAH and GOSSAN claims in the Rainy Lake area.

Terra Mining and Exploration Ltd., in addition to underground drilling at the Silver Bear Mine, drilled three surface holes (2 238 m) in the mine area to test the continuity of a sulphide zone that hosts silver bearing veins. Terra also drilled 10 holes on the Norex property.

Noranda Exploration Company Ltd. drilled 13 holes on the BUD, BIG, WEE, TALL, LEAN, MED and THIN claims in the Courageous Lake-Mackay Lake volcanic belt.

Other Commodities

Arctic Islands Region

From base camps at Pond Inlet and Holman Island Dispros Canada Ltd. continued its reconnaissance for diamond bearing kimberlite.

Slave Province

Canadian Superior Exploration Ltd. drilled lithium bearing pegmatites on the THOR claims, on the VOL and the KI claims and on the NITE claims in the Yellowknife area. Six holes were drilled on the THOR, two on the VO, three on the KI and one on the NITE claims. Tonnage and grade figures were released for 14 lithium properties.

Mine Rescue

Central Mine Rescue Stations are maintained at Whitehorse, Yukon Territory, and Yellowknife, Northwest Territories. Substations are established at each mine.

Mine Rescue teams from both territories compete in the Canadian Mine Rescue Championship each year. The Twelfth Competition was held on June 24 at Glace Bay, Nova Scotia, as teams from Alberta, British Columbia, Nova Scotia, and Saskatchewan competed. The Coleman Collieries team from Alberta was the winner of the "Soft Rock" competition while the Whitehorse Copper Mine team from the Yukon Territory was the winner of the "Hard Rock" event.

The USA standard method of recording and measuring work injury experience is used in the mining industry in the North.

For the first time since 1963 there were no fatal accidents in the Northwest Territories mining. It also marked the fourth consecutive year without a fatality to underground workers. Previously, fatality-free years for this group were recorded in 1961, 1963 and 1967. A total of 189 accidents caused 3 961 lost man days, equivalent to approximately 11 man years.

In the Yukon Territory, a total of 101 accidents were reported. There were no fatalities.

Northern Economic Planning Branch

Northern Roads and Airstrips Division

Responsibilities

The division has overall program and policy responsibility for development of the northern road infrastructure. It emphasizes the coordination of socio-economic, financial and environmental aspects in its planning. (Responsibility for maintenance and management of roads is being transferred to the territorial governments.)

Review 1978-79

The subgrade of the Dempster Highway was completed in 1978. The final two contracts were carried out by BACM (km 409-431) and Watsko Garage Ltd. (km 431-467). Surface graveling of the highway will be carried out 1979-82. The most critical areas will be gravelled first so that the road can be opened for limited use in the fall of 1979. A committee of representatives of the territorial governments has undertaken implementation of a management plan that should permit year-round use of the highway with minimum adverse impact on the environment.

Work on the Liard Highway was started again in 1978. Clearing and some construction is being carried out by Hire North, an agency of the Government of the NWT established in 1972 to give highway construction training and employment to native people. With the halt in construction of the Mackenzie Highway, Hire North moved to the Liard Valley. Small contracts for some of the work are being prepared, encouraging local entrepreneurs to submit bids. The remainder will be carried out by major contractors. To date all contracts have been awarded to northern entrepreneurs. The anticipated completion of the highway is 1982-83 when it will link Fort Nelson, on the Alaska Highway, with Fort Simpson on the Mackenzie Highway.

The composition of the Hire North Committee has changed. Native members now form the majority and in 1979 one native member was named a co-chairman.

The subgrade of the Carcross-Skagway Road was completed to the Alaskan border in 1978. Reconstruction of the section between Carcross and the British Columbia border will be carried out in 1979-81 so that it is of the same standard as the new section in British Columbia.

No plans have been made to keep the road open during the winter but it will depend on the future of the Yukon and White Pass Railway.

The Shakwak Project, a program for the reconstruction and paving of the Haines Road and the Alaska Highway between Haines Junction and the Yukon-Alaska border, now total approximately 590 km. The project is shared by Public Works Canada and the US Federal Highways Administration. The cost, estimated at \$200 million, will be paid by the USA. However, currently only \$58.6 million has been approved by Congress and scheduling has been altered to limit construction to the Haines Road. The project is expected to take ten years. In September two contracts were awarded to a Canadian company, North American Construction Ltd., for work in the area near Haines Junction. The Canadian Employment and Immigration Commission agreed to allow Americans to form up to 10 per cent of the total work force.

Yukon Native Construction Limited is in its second year of operation. From March, 1978, to October, 1978, the company, without a project manager, could not seek contracts. In October, through the assistance of the department, YNCL hired a general manager. The company is now seeking departmental assistance to establish itself as a viable gravel crushing operation for road construction in the Yukon. To date, Yukon Native Construction Limited has been awarded contracts valued at \$250 000. The contracts have provided native employment as well as financial return to native contractors for equipment rental.

Provision is made in DIAND's Northern Roads program for sharing the cost of construction of roads to approved resource development projects. Placer Development Ltd. is taking advantage of this program to build a road to its Howard's Pass property, from km 187 on the Cantung Road. The estimated cost of construction is \$1 725 000.

The Northern Exploration Facilities Program, which includes assistance for tote trails, low standard airstrips, small docks, helicopter landing pads and sea plane bases, is administered by the Yukon Government and the Government of the Northwest Territories.

Data Management Division

Responsibilities

The division develops, in association with the territorial governments and Statistics Canada, the system to produce macro-economic and manpower statistics and provide statistical data and analyses for Northern Economic Planning.

Review 1978-79

The sectoral economic accounts for each of the territories for the period from 1967 to 1974 have been integrated and draft reports completed. These reports contain information on gross domestic product, gross territorial product and an extensive range of more detailed data for each sector. Estimates of the gross domestic product for both territories for the period 1961 to 1966 have also been completed. Some preliminary conceptual and definitional work was undertaken on extension of quantitative studies into input-output analysis and financial-flow accounts.

A two-year project for the design and development of an integrated data base system was started. Conceptual and definition problems have been resolved and work commenced on an inventory of all statistical data relevant to the needs of the branch.

A study to update information on the characteristics of the native male labour force of the Yukon was undertaken and survey data collected.

Quantitative analyses pertaining to resource development, oil and gas projections and demography were continued. Similar studies in the field of federal government revenues were started.

Plans for 1979-80

The integrated economic accounts for each of the territories for the period from 1967 to 1974 will be published. Work will continue on updating these accounts to cover the period 1975 to 1978.

The data base system should be in place towards the end of the fiscal year. It is intended that some of the data will be made available in a series of monographs. Concurrently, the operations of the Division's Report Storage facility will be rationalized. As well, the division will assist in the design and computerization of a model for predicting the impact of various fiscal measures on the mining industry of the two northern territories (CASHSIM).

Regional Planning Division

Responsibilities

The division formulates and coordinates, with the territorial governments and other federal departments, development plans for regions of the North. It conducts studies of general economic conditions in the North, forecasts socio-economic problems and opportunities resulting from structural and institutional changes in the northern economies, and monitors governments responses to economic development recommendations of public advisory groups and regional economic conferences.

Review 1978-79

The Regional Planning Division completed arrangements for signing of the Canada-Yukon Subsidiary Agreement on Renewable Resource Development, the Canada-Northwest Territories General Development Agreement and the Subsidiary Agreement on Community Economic Development. The division carried out an analysis of the problems associated with the formation of native development corporations in the North. In addition, the division monitored territorial and federal government responses to recommendations of the Hay River Regional Economic Conference and provided material for the final report of the Business Advisory Committee.

Plans for 1979-80

The division will study the establishment of native development corporations in the northern territories. Negotiations on further Subsidiary Agreements between the federal and territorial governments will occur. Analyses of the territorial economies will be done to identify development opportunities and general problems of regional development.

Regional land use analyses and planning studies, to determine ways to resolve land use conflicts and to provide alternative strategies for economic development, will be done.

Employment and Socio-Economic Planning Division

Responsibilities

The division implements, in cooperation with the territories, the government's objective of equal opportunity for northern residents. The field involves the analysis, development and evaluation of programs. Standard economic growth patterns do not apply to remote, resource-scarce regions.

Review 1978-79

The division monitored native hiring practices in the economic growth sectors of the public service and the petroleum, mining and transportation industries. The early success of the petroleum industry peaked at a 50 per cent northern native involvement. With the downturn of land exploration and the move to offshore exploration, native involvement declined and communities are seeking training and employment opportunities for their young people. The mining industry remains of little interest to the labour force in general and native people in particular. However, the industry is trying new approaches in both the technological and labour force aspects of the industry's development in the North. The federal government's initiatives to employ native people within the public service, including this division's Northern Careers Program, have culminated in a joint Treasury Board-Public Service Commission policy which requires all departments to promote native participation. The decision to build the Liard Highway increased native hiring in the area, largely through Hire North.

Plans for 1979-80

The division will concentrate on coordinating and advising in the field of employment and the socio-economic impact of major northern development projects. Emphasis will be given to company leadership in the planning, development and operation of northern economic development projects. Work will also continue on the development of more effective techniques for assessing the socio-economic impact of major projects.

Economic Analysis Division

Responsibilities

The division provides advice on northern development strategies, policies and plans. It does economic analysis of resource development projects, energy and mineral policies, transportation and communications projects, renewable resources developments, the native economy, and projects of Crown corporations and government investments.

Review 1978-79

Transportation

The first phase of a study of options for transportation of mineral products from the northeast Mackenzie District was completed. The study was presented to a steering group of government and industry representatives. There was a continuing involvement in interdepartmental and industry meetings to solve the transportation problems associated with the tug and barge service of the Great Bear Lake area.

During the year the White Pass and Yukon Corporation requested financial assistance for its railway operating between Skagway and Whitehorse. An Interdepartmental Task Force, spearheaded by members of the division, reviewed financial problems of the railway, capital requirements, traffic forecasts, and the impact of railway closure upon the Yukon economy. Report of the Yukon Railway Task Force was released.

Work commenced on a review of policy for the construction of northern roads.

Non-Renewable Resources

Monitoring of the agreement between the government and Nanisivik Mines Ltd. continued. A monitoring of the financial position of the company was also undertaken during the year. The agreement with the Baffin Region Inuit Association, to conduct a socio-economic impact study of the project, was concluded.

In November, 1978, the Minister appointed a Special Mining Advisor and a Northern Mineral Advisory Committee to formulate policy and strategy for mining development in the North. Relevant background papers were prepared and the division was involved in the Sub-Committee on Fiscal Policies which reviewed the fiscal and royalty regimes applicable to mining in the two territories.

Negotiations continued between Cominco Ltd. and the government concerning the development of the Polaris Project of Arvik Mines Ltd. Company proposals were assessed, taking into account the effects of measures proposed in the November, 1978, budget as well as changes in shipping policy. Recommendations on a government position were prepared for consideration.

Several aspects of non-renewable resource developments in the Yukon were examined. This included an assessment of potential development of the mining industry, including mine openings and closures, and the development of base metal smelting facilities. Preliminary discussions with Kaiser Aluminum and Chemical Corporation, regarding the construction of an aluminum smelter in the Yukon, were held.

Renewable Resources

An agreement was reached with the Baffin Region Inuit Association to conduct a harvesting study in the Baffin Region. The study will concentrate on the harvesting of all hunting, trapping and fishing by Inuit in each community.

Crown Corporations and Government Investments

The division played a key role in implementing Cabinet decisions concerning electrical power costs in the North and the financial viability of the Northern Canada Power Commission. To alleviate power costs, the Federal Power Support Program was put in place with the cooperation of the utility companies operating in the Yukon and the Northwest Territories. The Support Program was designed to lower the power costs of northern non-government domestic residents in small communities to the levels paid in Whitehorse and Yellowknife.

The Northern Canada Power Commission was given an interest free loan of \$7.5 million to finance working capital investments. Funds were also approved to research heat recovery systems which would capture and use the waste heat from thermal generating plants. The division was involved in the evaluation of proposals for hydro-electric site investigations in the Yukon and obtained approval of \$3.15 million for this purpose. An evaluation of coal fired electric generating projects was also carried out.

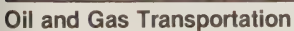
The division was a coordinator for various NCPC related activities and analysed the short and long-term financial position and plans of the commission.

A proposal was drafted to establish organizational structures to facilitate public participation in the decision-making process for hydro planning and developments in the North.

Plans for 1979-80

Phase II of the Northeast Mackenzie District Transportation Study will proceed. The study will further delineate the economic implications of selected routes for shipping mineral concentrate. Further work will be undertaken on the problems of the resupply of the Great Bear Lake area. The pilot study to assess the costs of imported southern foods in the Baffin Region will be undertaken. Further work will be done to support the departmental position on Yukon railway matters. A study of methodologies for the evaluation of road improvements will be initiated and work will be completed on a revised policy for road construction.

The division will be involved in the ongoing development of a northern mineral policy and implementation strategy. Assessment of the development of lead-zinc smelter capacity in the Yukon will continue. Studies on energy supply and demand in the northern territories are being considered. Negotiations with Cominco on the Polaris Project will continue.



Oil

- Trans-Alaska Pipeline
 Foothills Oil Proposal
 Tanker Routes

Northern Pipelines Branch

Responsibilities

The branch, established in July, 1977, to meet the demands on the northern affairs program of accelerated activity in hydrocarbon transportation in the territories, is responsible for all hydrocarbon transportation projects. The branch is the focal point for the planning, public review, assessment and post permit responsibilities for hydrocarbon transportation applications north of 60°. It is the base for the interdepartmental environmental-social program on research related to the impacts of northern gas and oil development. The branch has three divisions: Planning, Assessment and Public Review Divisions.

Review 1978-79

During 1978-79, the branch, on behalf of the Northern Pipeline Agency, established under the Northern Pipeline Act the socio-economic terms and conditions for the Alaska Highway gas pipeline. In addition, the branch prepared a basic document listing measures to be taken by the Yukon and federal governments to get maximum social and economic benefits and minimal adverse affects from construction and operation of the pipeline. The branch has remained in close contact with the Yukon Territorial Government.

Other hydrocarbon transportation proposals were also examined during the year. These include the Polar Gas application for an eastern arctic pipeline and the Arctic Pilot Project application, involving transporting of gas from the arctic islands by pipeline and liquified natural gas tankers to southern markets.

The Environmental-Social Program published more than 30 new reports.

Plans for 1979-80

Over the next year the branch will review and assess the Arctic Pilot Project application. Application for the Dempster Lateral pipeline, to bring Mackenzie Delta gas south, will be filed in July and also require assessment.

The Polar Gas "Y" Line application is expected this year also and a review of the socio-economic and environmental implications will be required.

An application was received in April to build an Alaska Highway oil pipeline, paralleling part of the Alaska Highway gas pipeline. This will require a specific review and assessment process.

Indian and Inuit Affairs Program

Responsibilities

The Indian and Inuit Affairs Program assists Indians and Inuit in the Northwest Territories and the Yukon Territory to achieve their cultural, economic and social goals within Canada. The program works in cooperation with native groups and associations and the territorial governments.

Headquarters

Review 1978-79

Band Training

A total of \$57 700 was allocated in the Yukon Territory and \$53 600 in the Northwest Territories during 1978-79 to support high priority activities assigned to band self-government.

In the Yukon, the Band Training Program provided facilities to meet training needs in social assistance, culture and development.

In the NWT, the emphasis was on a series of workshops to develop basic management skills of band staff. Efforts will continue to be directed toward improvement of band operational performances.

Advisory Services

Advisory assistance was provided through the Canadian Executive Services Overseas (CESO) organization to seven economic development projects in the Yukon. The University of Western Ontario supplied a student at the Yukon regional office.

Policy, Research and Evaluation Branch

Financial support was provided to the Council for Yukon Indians to research, develop and negotiate their Comprehensive Claim. It is expected that loans, to be repaid from the proceeds of future claims settlements, will continue in 1979-80 in line with the government's 1973 policy on the negotiation of Indian and Inuit claims.

Yukon Territory

Responsibilities

The Yukon Region of the Indian and Inuit Affairs Program maintains administrative functions for the program to approximately 3 200 status Indian residents of the Yukon Territory and the communities of Atlin, Good Hope Lake and Lower Post, in northern British Columbia. The program helps Yukon Indian people achieve their cultural, social and economic needs and aspirations and ensures that Canada's constitutional and statutory obligations and responsibilities are fulfilled.

Social Development Program

Review 1978-79

The number of Bands administering the Social Assistance program on behalf of the department increased from seven to nine during the 1978-79 fiscal year. There are still four bands not administering the program.

Social Assistance levels have remained relatively constant during the past two years.

The region hired a regional social worker to help the director of Social Development administer social services.

The director of Social Development conducted two workshops during the year and enlisted the services of Grant McEwan Community College, Edmonton, to provide a certificate course in Social Services for all band social services administrators.

During 1978-79 identification of child care need, and of the community resources required to meet the need, was carried out.

The Indian people have demonstrated a desire to assume responsibility for child welfare. Until such is achieved, cooperation will continue with the Territorial Department of Human Resources to increase the number of native foster and adoptive homes.

Promotion of the development of the Home Care Program in the Indian communities continues. Attention is now on identifying the best accommodation for the elderly in each community.

The Rehabilitation Program in the Yukon Region is concentrating on alcohol and drug abuse.

The department has representation on the National Native Alcohol Abuse Program Regional Advisory Board.

A new coordinating committee established in the Yukon represents territorial and federal departments and agencies engaged in social development activities. The native organizations have representation.

Plans for 1979-80

During 1979-80 band social services staff will be provided with an opportunity to upgrade technical and practical skills. This will be accomplished through an agreement with Grant McEwan Community College, Edmonton.

The Social Development Program hopes to hire an additional social worker to concentrate on development of band resources.

Local Government Program

Review 1978-79

During 1978-79, all 13 Yukon bands and Good Hope Lake, B.C., were assisted in the operation and maintenance of programs for core funding, band financial management, water and sanitation, roads, fire protection, recreation. The programs will continue in 1979-80;

All bands received assistance with capital construction of community facilities during the past fiscal year. Good Hope Lake, B.C., also received support from the region's operation. Projects during 1978-79 included:

Housing:	31 homes constructed, 42 renovated
Band Halls:	1 band hall
Electricity:	13 homes received electrical upgrading. Electricity was introduced to Good Hope Lake Indian community.
Water and Sanitation:	Dawson Band hooked-up a water system. A sewer system was installed in the Atlin Indian Village.

Plans for 1979-80

The bands forecast construction of 18 homes and renovation of 23 others. One band office and three community halls will be constructed.

Five bands will extend electrification. Six bands expect to further water and sewer services and one band intends to build a community wash house.

The communities of Carcross, Teslin, Whitehorse and Old Crow have budgeted for road work.

The Yukon Region has budgeted funds for work on the Whitehorse Band relocation project and burial grounds.

In April, 1979, the Yukon Region assumed administrative responsibility for Good Hope Lake, B.C. This year's plans are for two homes to be constructed, major renovations to the community wash house, installation of a water system, extension of major power lines, purchase of a backup power plant and rebuilding of the village road system.

Education

Plans for 1979-80

The education program will continue to respond to requests for specialized training. The welfare administrators program will be completed by the fall of 1979. Plans are under way to intensify band government training.

Concentrated efforts will be made to provide additional help and counselling of all students.

Economic Development Program

The section assists the Indians in development or expansion of economically-independent business opportunities, in the creation of employment opportunities, and in competing successfully in the broader economy. To accomplish this, there are programs of contributions, grants, and loans, and business advisory services.

Review 1978-79

During 1978-79, new businesses were funded in the heavy equipment construction, retail, tourist, forestry, and service industries. Management training services were provided for 14 existing Indian businesses and funds for socio-economic studies. Thirty-two full-time jobs were created.

Plans for 1979-80

In 1979-80, funds for five Indian band socio-economic committees will be provided. At least eight new businesses and 11 existing Indian businesses will also receive funding.

Two Indian persons will be trained for public service positions.

The department helps Indians achieve their needs and aspirations by identifying, planning and developing their natural resources and economic self-reliance. Management and control of lands and natural resources on Indian reserves is provided; and responsibilities set out in the Indian Act are administered on behalf of the Indian people.

Review 1978-79

In 1978-79, seven new parcels of land were added to the department's holdings for Indian housing. Five land surveys were completed.

Plans for 1979-80

The department proposes to establish a joint DIAND/Council for Yukon Indians/Band Committee to review land problems and concerns and take action where necessary. A list of Indian lands requiring surveying will be prepared and surveys done as budgets permit. A Yukon lands training module will also be prepared.

The Yukon Regional office is presently undergoing administrative reorganization. The staff is being increased in the areas of local government, finance and administration, and technical services so that Indian bands will receive improved service from the department.

The Native Employment Plan is part of the reorganization as Yukon native people will be trained for various departmental duties.

Northwest Territories

Responsibilities

The Regional Office for Indian and Inuit Affairs in Yellowknife assists the registered Indian population in the NWT in social, economic and band development in consultation with Band Councils, Native Associations and the NWT Government. Specific programs included: satisfying the government's annual Treaty obligations to bands and individual Indians; core funding to Band Councils, enabling the councils to develop an administrative office and provide training to Band Councils and their staff in administration and financial management. The Economic Development Program provides advisory and financial assistance to Indian people in their socio-economic development and liaison between the Indian people and the various levels and agencies involved in economic development in the North.

Review 1978-79

The Core Funding Program continued to strengthen Band Council administration. A training program for band councilors and their staffs was improved through the advice and direction of a Regional Training Committee and the establishment of a Training Facilitator staff position at Regional Office.

An all-Chiefs Conference in the fall, 1978, in Fort Simpson, identified the increased need for good band managers. A Band Works Program was initiated to provide a mechanism for bands to employ managers to assist in coordinating programs.

The NWT Native Womens Association received on-going advice from the branch including particular support in the arts and crafts program development.

The Economic Development Branch provided financial assistance and advisory services to 41 on-going native enterprises and assisted 10 new native ventures. Significant development activity at the community level in Fort Liard, Fort Rae, Snowdrift and Fort MacPherson resulted in establishment of community-based companies involved in local economic opportunities. Financial assistance totalling \$500 000 was provided for infrastructure, management, technical and professional advice. Projects varied from the long-term planning of the development of a commercial complex to the on-going activities of medium and small native businesses.



A resident of Ilkalu lodge wearing a traditional parka.

Plans for 1979-80

The training and development of Band Councils and administrations will continue. Two all-Chiefs Conferences will be held this year. Increased monitoring on accountability and management of core funds will be emphasized.

The Economic Development Programs will provide advisory and financial services to native enterprises. There will be increased focus on community based economic development activity.

Education Program

The Indian and Inuit Affairs Branch has indirect involvement in providing services to NWT elementary and secondary school students. It is directly involved in post-secondary school, adult and band training education, and vocational training programs.

Review 1978-79

Twenty-seven students were sent to colleges and technical training institutes during this year. Nine students attended university programs in B.C., Alberta and Ontario.

One hundred and twenty-five elementary and secondary students were placed in Yukon Hall and attended classes in Whitehorse.

Various training programs, with an emphasis on financial management, were carried out at band level. A 12-week welfare administrators training program was begun during spring of 1978.

The old Lower Post student residence will be converted into a community complex to provide recreation and adult education. This was accomplished in conjunction with funding from DREE.

Parks Canada

National Parks Branch

Responsibilities

The National Parks Branch examines and evaluates sites to determine their potential as national parks and landmarks, and plans the development of existing national parks.

Review 1978-79

In January, 1978, public consultation began on the feasibility of setting aside five areas north of 60 as national parks and one area as a national landmark. The proposed sites are in the Northern Yukon, Northern Banks Island, Bathurst Inlet, Wager Bay, Northern Ellesmere Island, Axel Heiberg Island and near Tuktoyaktuk, where the national landmark site is proposed. At the end of August, 1978, Parks Canada opened an office in Yellowknife to facilitate public discussions about these proposals.

The Council of the Northwest Territories adopted a resolution in January, 1979, opposing the creation of new national parks in the NWT. Parks Canada has proposed that the federal and NWT governments work together to plan complementary national and territorial park systems.



Virginia Falls, Nahanni National Park

Native people are involved through meetings and informal discussions in the communities most directly affected by the proposals. Meetings and discussions have also taken place with regional and national native organizations. Native people are chiefly concerned with the protection of hunting, fishing and trapping rights.

The withdrawal of land in the Northern Yukon, north of the Porcupine and Bell Rivers, announced by the Minister in July, 1978, was supported by Native people who use the region. Spokesmen for the Yukon government, and the petroleum and mining industries expressed concern that adequate consultation should take place before any further land withdrawals were made.

An Agreement-in-Principle with the Committee for Original People's Entitlement (COPE) established a 13 000 km² wilderness park along the Yukon North Slope. Recommendations to the Minister on designations for the Northern Yukon area will be made by the Wilderness Park Steering Committee as provided in the COPE Agreement and by a Task Force on the Porcupine-Caribou Range announced by the Minister at the time of the Northern Yukon withdrawal.

Northern Research Studies

Research activities in the North included a study of the biological and oceanographic characteristics of the eastern Arctic marine region; a study of the natural themes of the eastern Arctic lowlands; and a study of the MacKenzie Delta. A natural resource survey of the Horton-Anderson River area was completed.

Kluane National Park

Review 1978-79

Construction began on a new administration-visitor reception centre in Haines Junction. Since many of Kluane's unique features are inaccessible to visitors travelling the Alaska Highway, the new center will play a key role in park interpretation.

A 41-unit campground was constructed at Kathleen Lake - the first at Kluane. A new warden-information office was completed at Destruction Bay, and the Rock Glacier Trail was built with the help of the Conservation Corps.

Reconstruction and paving of the Alaska and Haines Highways, which began last summer, will provide visitors with paved access along the eastern and northern perimeters of the park.

Public participation continued on the development of a master plan for Kluane National Park. Four alternatives were presented at public meetings in the Yukon, British Columbia and Alberta. Presentation of the best plan was scheduled for May, 1979.

The Kluane warden service was presented with the Royal Lifesaving Certificate for the 1977 helicopter rescue of an injured climber on Mount Logan, Canada's highest peak.

Plans for 1979-80

Installation of interpretive panels along Rock Glacier Trail will complete the first interpretive facility in Kluane. The headquarters building at Haines Junction will be finished along with development of displays and an audio-visual program.

The Canada Post Office issued a two dollar postage stamp on April 27, 1979, to commemorate Kluane National Park. Canada and the United States have agreed to put forward the first joint nomination to the Unesco World Heritage List, proposing the St. Elias mountain range, encompassing Kluane National Park in Canada and the Wrangell-St. Elias Monument in the United States.

Final approval of the Kluane National Park Master Plan is expected this year.

Nahanni National Park

Review 1978-79

Nahanni National Park was the first natural site chosen for the Unesco World Heritage List. It was described as being of outstanding universal value at the World Heritage Committee meeting in Washington in September, 1978.

A feature film on Nahanni National Park was broadcast on the CBC television network as the opening program in a new Wild Canada series. Nahanni is also featured in a book on the Great Canyons of North America, soon to be published by the National Geographic Society.

About 300 visitors spent a total of 3 000 person-days in the Park. There is no road access to this wilderness area and charter aircraft is the normal means of entry. Visitors with high powered boats can drive to Fort Simpson and travel upstream on the Liard and South Nahanni Rivers as far as Virginia Falls, or they can travel downstream on the Liard from Fort Nelson.

Seven full-time employees staff the park. Seasonal native laborers are hired at Nahanni Butte and a native patrolman was hired for training as a seasonal employee.

An environmental impact assessment of the Rabbitkettle Hotspring area was made by researchers from the University of Alberta. Their report is awaited. A fire history research program was completed and the report is in preparation.

Plans for 1979-80

Unveiling of a Unesco World Heritage plaque is planned for summer 1979.

The part-time Indian patrolman will attend a three-week warden school at Jasper.

At Virginia Falls, primitive campsites will be developed and trails will be improved.

A patrol cabin is being built in Deadman Valley.

Wood Buffalo National Park

Review 1978-79

In preparation for the development of a Park Management Plan, an inventory of baseline information continued during 1978-79. It was the last year in which field work was carried out for a three-year inventory of biophysical resources in the park.

Monitoring of the bison herd continued to determine total population, calf crop, and herd recruitment. The count in late February totalled 5 539 animals. In addition, the second year of a three year-study of the predator-prey relationship between wolves and bison monitored the activities of radio-collared wolves and observations throughout the summer from a blind on the calving ground.



Yelverton Pass, northern Ellesmere Island

A fire history study was begun. The eventual goal is to prepare a fire management plan so as to re-introduce the role of fire in the ecosystems. Forty-one fires were extinguished at a cost of \$521 000.

A study continued into the trout populations of Pine Lake in order to develop a restocking plan.

A woodland caribou inventory was completed in late winter and winter range was mapped.

Anthrax occurred in the bison herds of both the park and the Northwest Territories. This contagious disease can be fatal to humans. Park staff disposed of dead animals by incineration. This involved digging five-foot pits where the animals were found, burning the carcass to ashes in the pit, filling the pit, and spreading lime to discourage wallowing by other animals. Forty-eight dead bison were located.

Minor changes were made in the procedures for dealing with dead animals. Staff training in these new procedures was completed and equipment and materials purchased in the event of a future outbreak.

New Wood Buffalo Game Regulations were approved. All aspects of the regulations will be in effect by late 1979. Park staff worked in close liaison with the Wood Buffalo National Park Trappers Association, and non-member trappers in preparing and implementing the new regulations.

The superintendent and staff assisted the Fort Chipewyan Cree Band in establishing their settlement at Peace Point.

A new wayside stop was completed at Klewi Lake, 105 km northwest of Fort Smith. A second site, about 95 km south of Fort Smith, at Cherry Mountain, was upgraded.

Interpretation

A detailed plan of all sub-activity operations for the next three years was prepared. The interpretive program continued with new emphasis on providing field-type activities for people without transportation in the Fort Smith area. The Junior Naturalist Program was also expanded.

The personnel extension program "Road Tour" was again offered to 13 northern communities. Programs were given to 3 900 individuals.

Several new publications were prepared, including a new main park brochure and several checklists. Other draft texts are now waiting approval.

The orientation exhibit for canoeists entering the park on the Peace River from the west was prepared. It will be installed at the small Cree settlement of Garden Creek this spring. The exhibit is trilingual, French, English and Cree.

Trail planning continued in the Rainbow Lakes, Cherry Mountain and Pine Lake areas. Work will continue in 1979-80.

An exhibition of historic photos of several national parks by Bill Oliver was presented at the Northern Life Museum in Fort Smith.

Native Employment

A Native graduate of the park training program was promoted to a position at Prince Albert National Park. Seasonally, the park employs about 80 Native persons.

Plans for 1979-80

A new 36-unit campground at the Pine Lake recreation area is near completion and will open in May. This campground will replace the old 27-site facility which was poorly designed for both maintenance and environmental considerations. Another new development in the area will be a 100-seat interpretive theatre and fire-circle complex. This will eliminate the conflict of use of the picnic shelter between interpretive programs and picnics.

A new orientation exhibit for the interpretive office is in preparation.

Auyuittuq National Park

Review 1978-79

Although Auyuittuq is Canada's third largest national park in land area, approximately 21 500 km², the staff is small due to its isolation. Full-time staff consists of three Inuit and four whites. Three other Inuit are hired for two to six months a year as Seasonal Wardens and an Information Officer.

The Park provided employment for other Inuit from Pangnirtung and Broughton Island through contracts amounting to \$27 500 during the fiscal year. The park has generated employment indirectly as well; three local outfitters provide accommodation, camping equipment and boat access to the Park. Auyuittuq provides - directly or indirectly - full or part-time employment for 26 individuals, most of whom are Inuit.

During the past year, the emphasis has been on finding or devising training programs for the staff. General upgrading during the off season in basic educational standards has been provided for the Wardens and Clerk through the NWT Adult Education program.

The Park made an informal agreement with Kluane National Park whereby Inuit Wardens will spend up to a year being trained in such activities as resource monitoring, mountain rescue and enforcement - not now a part of Auyuittuq National Park's regular routine. With the assistance of the Northern Program's On-The-Job-Training the Park will train another local person as a Park Warden, to temporarily replace the Warden who will be training in Kluane. This program is effective April 1, 1979. The permanent warden transferred to Kluane in mid-April.

The Park has been organizing an extension program for the Inuit of the eastern Arctic on the functions of a national park, the effect on the communities of Pangnirtung and Broughton Island, and the impact of the Park on the traditional use of their land by Inuit.

The Park is obtaining a series of films entitled *The Netsilik Eskimo*, from the National Film Board for public showings. The movies will be shown in outpost camps.

During the year, approximately 1 200 persons visited the Park office, 219 registered for overnight stays. The majority of overnight visitors were from Canada. The mean length of stay was 12.5 nights, down by almost 5 nights from the previous year – probably due to poor weather conditions. The groups from the UK spent a mean time of 30.5 nights per person – well above the 7.3 for Canadians and 12.2 for those from the US. Other countries represented last season were France, Germany, Switzerland and Luxembourg.

Very little physical development has been undertaken within the Park's boundaries as all buildings, with the exception of six emergency shelters and two Wardens' cabins, are situated either in Pangnirtung or Broughton Island. A third Warden's cabin will be built in the Park by March 31. An 18 km section of primitive trail was cleared and marked with Inukshuks and a second primitive campground started.

Plans for 1979-80

The major thrust will be to develop an expanded extension program for the eastern arctic, especially in the provision of translated materials to the public.

A search and rescue plan will be drawn up by the Chief Park Warden with the assistance of the Warden Trainee and an alpine training program will be initiated in 1979.

Interim Management Guidelines will be nearly completed by the end of the fiscal year. These will involve considerable consultation with the Hamlet Council and the local Hunters and Trappers Association.

Only minor physical developments will be undertaken. A heated garage storage shed is planned for Broughton Island and an unheated storage shed will be erected in Pangnirtung.

A further primitive trail and a foot-bridge will be constructed to give the Summit Lake route access by two trails.

National Historic Parks and Sites Branch

Responsibilities

The branch is responsible for commemorating places, persons or events that have been declared by the Historic Sites and Monuments Board of Canada to be of national historic significance.

Klondike National Historic Sites

Review 1978-79

The Klondike Master Development Plan received Ministerial approval. The Black's Residence was completed as a period restoration with adaptive interior use. The Klondike Thawing Machine Co. building was restored and a start was made on restoring Mme Tremblay's Store which will be used for staff accommodation and interpretive use. Research was a major element of the program with recording and archaeological investigations conducted in Dawson City.



Wilberforce Falls, Bathurst Inlet, NWT highest falls in the world north of the Arctic Circle.

Over 100 000 historic artifacts are stored in about 20 buildings in Dawson City. These will be catalogued and placed in proper storage. Cataloguing was carried out in the Bear Creek Complex. Interpretive work during the summer tourist season was conducted at the Palace Grand Theatre, Steamer Keno, Old Post Office, Robert Service Cabin, Gold Dredge no. 4, a new exhibit in the rehabilitated Harrington's Store and the Bear Creek Complex.

Discussions continued with the City of Dawson on means of preserving the historic area of the city.

Plans for 1979-80

The government's fiscal restraint program required a stretching out of the Master Plan to begin in 1980-81. Activities in 1979-80 will be to prepare for that period, during which a major stabilization program will be implemented to ensure that the historic resources of KNHS remain in good condition while waiting for the full implementation of Master Plan.

All projects underway will be completed in the coming year. This includes the second phase of the Mme Tremblay project which includes installation of window displays and restoration of the facade to the 1905 era. Similar works will be completed on the KTM building.

Landscaping of McCauley House, C.O.'s Residence and the Black's Residence, which have restored exteriors, will add significantly to the Dawson streetscape.

Emphasis will be placed on interpretive facilities in Dawson rather than on the goldfields. Special interpretive programs will be offered daily at the Palace Grand Theatre and regular tours will be offered at most facilities.

Agreements for Recreation and Conservation

Responsibilities

ARC seeks to preserve areas which contain nationally significant natural and human heritage resources. This work is accomplished through cooperation with federal and provincial bodies and other agencies. It involves identification of heritage areas and agreements for planning, development, preservation and operation of the area's resources. Emphasis is placed on developing facilities of historical, scenic and cultural significance.

An ARC agreement seeks to define the required developments, assign jurisdiction responsibility and allocate costs among the participating agencies.



Ibyuk Pingo, near Tuktoyaktuk, NWT.

Review 1978-79

Parks Canada and the Yukon Department of Renewable Resources and Northern Lands began consideration of a plan for developing the Yukon River as a recreational and historic waterway. Work was begun to protect heritage resources along the river which were threatened by decay, vandalism or visitor overuse. Initial clearing of brush and stabilization of some structures was carried out to help ensure that these valuable remnants of the Klondike Gold Rush remain for future generations.

Representatives from the Yukon and Northwest Territories attended a national seminar on Canadian Wild Rivers held at Jasper, Alberta, in September, to discuss proposals for identifying and managing representative heritage waterways, including Northern rivers. Following the seminar, discussions began with both territorial governments and the provinces on developing concepts for a cooperative program.

Plans for 1979-80

The concept plan for development of the Yukon River will be completed this year.

Parks Canada and the Yukon Government will continue work on carrying out an interim protection plan for heritage resources along the Yukon River. Emphasis will be given to stabilization work at Fort Selkirk. ■

Department of Industry, Trade and Commerce

ITC

Canadian Government Office of Tourism

Following consultation with the Tourism Departments of the Yukon Territory and Northwest Territories Governments, the Canadian Government Office of Tourism, Department of Industry, Trade and Commerce, acquired \$58 000 from the Canada Employment and Immigration Commission under the Summer Job Corps Program (SJCP) to create six projects covering 25 jobs or 364 work weeks.

Projects in the Yukon included an auto exit survey, Indian history research and logistical support to museums.

In the Northwest Territories, an auto exit survey and a general clean-up and paint-up of campgrounds was carried out.

Responsibilities

The Minister of Justice is responsible for appointment of judges to the Territorial Supreme Courts. The department itself is responsible for direction of court proceedings on behalf of the Crown, including prosecutions under the Criminal Code and other federal statutes and territorial ordinances. It also shares the cost of legal aid, native courtworker and compensation to victims of violent crimes in the territories. The department maintains offices in Whitehorse and Yellowknife.

Review 1978-79

Federal payments totalling \$280 089 were made to the NWT, including \$70 000 for legal aid, \$18 089 for compensation to victims of violent crimes, \$142 000 for native courtworker services and \$50 000 towards the cost of an experimental community legal services clinic in Frobisher Bay.

The territorial government, in consultation with the Department of Justice, is developing an ordinance which will amalgamate the delivery of legal services in the NWT under the aegis of a single board of directors. This action could affect the delivery of courtworker services in the territories.

Payments totalling \$66 620 were made to the Yukon Territory. This included \$34 400 as the federal share of legal aid, \$720 for compensation to victims of violent crimes and \$31 500 toward the Native Courtworker Program. A new long-term federal-territorial agreement was signed for the delivery of native courtworker services in the Yukon effective April 1, 1978. Additionally, a Native Courtworker Society was established to operate the Native Courtworker Program.

Plans for 1979-80

The report of the Review Committee on Legal Aid in the NWT, filed with the Department of Justice in June, 1977, resulted in a series of talks with officials of the department, the territorial government and the various bar and native groups to consider action to be taken on recommendations in the report. An ordinance providing for implementation of many of the Review Committee's recommendations, and a restructuring of the legal aid plan, was considered by Territorial Council. After passage of the Legal Services Ordinance, a new federal/territorial cost sharing agreement is expected to be concluded and effective retroactively to April 1, 1978. ■

Responsibilities

Employees or employers in any work or business of an inter-provincial, national or international nature are under the jurisdiction of Labour Canada.

The department administers the Canada Labour Code and has federal responsibility for Industrial Standards, covering conditions of work, minimum wages, hours of work; Health and Safety of Employees; and Industrial Relations, covering collective bargaining and labour-management relations.

The department maintains offices in major centres across Canada to make services more immediately accessible. These offices have primary responsibility for implementation of departmental programs while maintaining close liaison with headquarters.

Working in partnership with all parties in labour affairs, Labour Canada helps pinpoint and analyze issues and problems, searches for equitable solutions and new techniques, and serves as an impartial catalyst.

Mediation and Conciliation Services

The Mediation and Conciliation Branch, with the assistance of conciliation officers, conciliation commissioners, conciliation boards, mediators and industrial relations consultants, provides third-party services to labour and management covered by the federal jurisdiction of the Canada Labour Code (including territorial jurisdiction). This service covers the settlement and adjustment of collective bargaining and other industrial relation disputes affecting labour/management relations, industrial stability and socio-economics.

Review 1978-79

During the fiscal year the branch handled 29 collective bargaining disputes affecting Yukon and NWT employees. The disputes involved companies in airline, drilling, mining, railway, shipping and trucking operations, construction and municipal services. They were handled to finality at the conciliation officer stage or in post-conciliation officer negotiations. Two disputes were settled following the parties' failure to reach settlements through conciliation officer assistance and legal strike action.

Arbitration Services

Arbitration Services is involved in certain labour relations matters in the Northwest Territories and the Yukon. Specifically, it plays a role in certain disputes arising over the interpretation, application or alleged violation of collective agreement provisions. When the Minister is asked to intervene in disputes and appoint arbitrators and arbitration board chairmen, Arbitration Services studies the requests, determines their validity in the light of the relevant provisions of the Canada Labour Code and the applicable collective agreements and gathers all information to recommend action.

Review 1978-79

During 1978-79, six requests were received from the North for Ministerial appointments. In these situations, arbitration board chairmen were appointed three times and an arbitrator once. One dispute was settled with the assistance of Arbitration Services Branch. One case is pending.

Mountain Region

Labour Canada's Mountain Region, administered Part III and IV of the Canada Labour Code, Treasury Board occupational safety policies, standards and guidelines in the Federal Public Service and the Fair Wages and Hours of Labour Act in the NWT and Yukon during 1978-79.

Federal Contracts

During the fiscal year nine Fair Wages and Hours of Labour Act inspections were carried out by labour affairs officers. Of these seven were in the Northwest Territories and two in the Yukon. As a result of these inspections wage adjustments were collected from five contractors. In the Yukon, violations were corrected and \$386 was recovered for one employee while in the NWT \$5 259 was collected for 58 employees. Additional inspections involving northern contracts were conducted at contractors' head offices in Vancouver, Edmonton, and Calgary.

There were 78 wage schedules issued for construction contracts in the NWT and 40 in the Yukon. Two service contracts were issued in the NWT and three in the YT.

Annual construction wage surveys were conducted in the Northwest and Yukon Territories to obtain sufficient wage data to establish prevailing wage rates for Labour Conditions Schedules, federal government contracts. These prevailing wage rates are also made available to the Yukon Territory Labour Standards Branch.

Part III — Canada Labour Code (Labour Standards)

Provisions of Part III of the Canada Labour Code do not apply to a work, undertaking or business of a local or private nature in the Yukon or the Northwest Territories, but do apply to those businesses or undertakings that normally come under federal jurisdiction.

During 1978-79, 28 complaints were investigated under Part III of which 16 were in the Yukon Territory and 12 in the Northwest Territories. As a result of these investigations, \$4 126 was recovered for 13 employees in the Yukon Territory and \$5 927 for 23 employees in the Northwest Territories. In the same period 11 routine inspections were carried out in the Yukon resulting in \$6 249 being recovered for 17 employees.

In addition, a number of complaints from persons employed by companies in the territories were resolved by investigations conducted at company head offices in Vancouver, Edmonton and Calgary.

Part IV of the Canada Labour Code (Safety of Employees)

The long-term objective is the implementation in the territories of a comprehensive employment safety program covering employees subject to Part IV of the Canada Labour Code and employees in the public service of Canada who are covered by the Treasury Board Occupational Health and Safety. Under Part IV, the department makes sure employers maintain safe and healthy working environments in federal works, undertakings and businesses. In the federal public service, the department is Treasury Board's agents assisting in the development and improvement of safety programs and monitoring existing ones in accordance with the occupational health and safety policies.

The Minister of Labour officiated at the opening of Labour Canada's office in Whitehorse, Yukon Territory, August 2, 1978. The office, to service both the Yukon Territory and Northwest Territories, is staffed by a labour affairs officer and clerical support. The office will be supplemented as required by staff from Vancouver or Edmonton.

Summary of Activities

In the NWT, 10 safety visits involving inspections, surveys, program audits and accident investigations were undertaken during 1978. Industries, companies, crown corporations or departments covered were: aircraft industry, RCMP, Environment Canada, and Transport Canada.

In February, 1979, the technical advisor, Occupational Safety and Health, visited both the Northwest and Yukon Territories. Meetings were held in the NWT with representatives of the Labour Standards Department, the Department of Indian Affairs and Northern Development, Northwest Territories Inspection Branch, and representatives of the Public Service Alliance of Canada.

The labour affairs officer conducted a two-day management seminar for the Department of Indian Affairs and Northern Development in Yellowknife. In the same community, he presented a paper on Labour Canada to the Northern Air Transport Association Convention in March, 1979. The ShakWak Highway Project is progressing on schedule. Extra heavy expenditures are anticipated in 1979 to avoid conflict with construction expenditures on the Alaska Highway gas pipeline. Pipeline activities are proceeding but it is expected that the beginning of actual construction will be delayed about one year.

In the Yukon Territory, the two district managers met with the new commissioner, Mrs. Ione Christensen, the Labour Standards Department and the Occupational Safety and Health Department.

The labour affairs officer conducted 28 visits involving inspections, surveys, safety audits, program development and accident investigations. The industries, crown corporations and government departments covered were: Transport Canada, Northern Canada Power Commission, CBC, Environment Canada, railways, Public Works Canada, Indian Affairs and Northern Development, CN Telecommunications, Revenue Canada, Post Office, Customs and Excise, hospitals, banks and aircraft and trucking industries.

Labour Canada's agreements to have the Northwest and Yukon Territories conduct technical inspections in connection with boilers, pressure vessels, electrical installations and elevating devices were terminated February 28, 1979. However, during 1978-1979 technical inspections undertaken included 249 on boilers and pressure vessels, 75 on electrical installations and three on elevating devices.

Accident Compensation

At the end of March a total of 261 claims were processed in the Northwest Territories and 127 in the Yukon Territory.

Plans for 1979-80

The priority in the territories will be promotion and establishment of safety committees in both the private sector and federal jurisdiction of the public sector.

Library and Information Services

The Legislative Analysis Unit of Library and Information Services provides information on industrial relations, employment standards, occupational health and safety and workers' compensation legislation.

Ordinances adopted in the Yukon and Northwest Territories, as well as legislation of all Canadian jurisdictions, are analyzed and summarized in regular publications such as the Legislative Review, Labour Standards in Canada, Workers' Compensation Legislation in Canada, and the Index of Labour Legislation. Relevant Territorial Ordinances are also listed in the Directory - Occupational Safety and Health Legislation in Canada, 1979.

Labour Data Branch

The Labour Data Branch carries out an annual survey of wages, salaries and conditions of work in establishments with 20 or more employees. The October 1, 1978, survey included 54 establishments in the Yukon Territory and 60 in the Northwest Territories. The survey will be carried out again in 1979.

Information on work stoppages due to strikes and lock-outs in the two territories is maintained on a continuing basis. In 1978, one work stoppage was reported. It involved 14 workers and time loss of 440 man-days.

The branch maintains a file of collective agreements, including 69 covering some 8 480 employees in the territories.

The last report on labour organizations and union membership showed 74 union locals with membership of over 6 661 in the NWT and Yukon.■

Department of National Defence

DND



Mapping and Charting on Baffin Island

Responsibilities

The national aim is protection of Canadian sovereignty and independence by surveillance of national territory, airspace and sea approaches. In the North the Department of National Defence supplements and supports the civil departments and agencies of government protecting Canada against challenges to its internal security and territorial integrity (including the integrity of Canadian territorial sea and air-space). DND also helps reinforce the nation's jurisdiction under national and international law and contributes to security arrangements geared to preserve peace.

Review 1978-79

Canadian Forces recruiting teams from Vancouver, Edmonton, Winnipeg, and Montreal gave employment and career briefings in 21 communities in the Yukon Territory and the Northwest Territories. This was done so that northern residents would continue to be aware of training and employment opportunities in the Canadian Forces. Visits were carried out at Watson Lake, Whitehorse, Carmacks, Faro, Mayo, Dawson, Fort Smith, Hay River, Yellowknife, Norman Wells, Fort McPherson, Akla-vik, Inuvik, Tuktoyaktuk, Eskimo Point, Rankin Inlet, Baker Lake, Frobisher Bay, Hall Beach, Igloolik, and Pangnirtung. Applications were received from 24 native people seeking enrolment in the Canadian Forces. Sixteen of them were subsequently enrolled, but seven have since requested, and been granted, release.

Tours of military training facilities at Canadian Forces Bases Borden, Kingston, Halifax, and Cornwallis were jointly sponsored by the Department of National Defence and the Department of Indian Affairs and Northern Development for 24 northerners engaged in employment or training activities in the Northwest Territories.

The Canadian Forces School of Aerospace and Ordnance Engineering at Canadian Forces Base Borden, Ontario, conducted its annual seven-month course in aircraft mechanics for northerners. They are subsequently employed by aircraft companies operating in the North.

Maritime Forces

The replenishment ship *HMCS Protecteur* participated in the annual *Box Top* operation by transporting 1 120 tonnes of construction material and 1 000 empty gasoline barrels from Montreal to Thule between July 13 and August 7.

Argus aircraft flew approximately 1 000 hours of northern patrols (*Norpats*) in the arctic during 1978-79. *Norpats* Argus operated out of Frobisher Bay, Yellowknife, Cold Lake and Edmonton. In addition to sovereignty surveillance, these patrols supported various government agencies. During the ice season most Argus on *Norpats* carried Transport Canada ice observers and conducted ice reconnaissance *Norpats* also did photographic tasks for DIAND, Environment and EMR. This included investigation of off-shore oil exploration and drilling activity on the archipelago. Scientists and observers from other government departments were carried to conduct activities such as investigation of seabird and marine populations in the Beaufort Sea and ice research along arctic shores.

Land Forces

Mobile Command elements were involved in 16 exercise *Northern Viking* patrols during 1978-79. These 25-man patrols allow junior leaders the maximum amount of initiative while living and moving in the North. Sixty-one survival cairns were installed in various patrol areas. Local community projects included building baseball fields, doing minor construction projects, assisting in the construction of an amplitude modulated radio station, assistance to cadet corps, instruction in first aid and, repairing a community icemaking machine.

All Mobile Command formations conducted one company-sized winter exercise North of 60. Companies were airlifted to Dawson, Whitehorse, Resolute Bay and Yellowknife.

One formation conducted a reconnaissance exercise for senior officers which covered large portions of the North and involved meetings and briefings at various communities. Long-range communications exercises were also conducted with radio detachments deployed throughout the North.

Air Forces

During the annual *Box Top* airlift, Hercules aircraft transported 1 131 tonnes of general stores from Thule, Greenland, to CFS Alert, as well as 3 380 689 L of diesel fuel, 13 305 L of jet fuel and 37 853 L of gas. A "mini" *Box Top* was flown using Boeing freighters to airlift material to Thule for onward lift by Hercules to Alert. The Boeing was more cost effective than taking the material to Thule by Hercules.

Hercules aircraft continued to provide weekly service and special flights to support the Canadian Forces' Communications Stations at Alert and Inuvik. During the fiscal year, 959 225 kg of construction material and general cargo were lifted to Alert and 571 951 kg to Inuvik.

The Northern Airfield Construction program was supported by Hercules and Buffalo aircraft. Buffalo aircraft spent more than 600 hours in the project.

During 1978-79, a number of land exercises were conducted throughout the arctic, including Project *Kimona*, *Nanook Lark* and *Northern Viking*, all supported by Hercules and Buffalo aircraft. Air Transport Group (ATG) also flew Hercules missions in support of *Op Arctic*, for the CF Mapping and Charting Establishment.

Two Twin Otter aircraft at 440 Squadron Detachment Yellowknife were used for communications flights and search and rescue missions.

The Department of Energy, Mines and Resources was supported by Hercules aircraft during its geoscience study of the Lomonosov Ridge, 177 km south of the North Pole. Sixteen Low Altitude Parachute Extraction (LAPES) missions were flown from Thule, Greenland to deliver 208 389 kg of fuel, explosives and equipment to the temporary research station established on an ice flow.

In 1978-79 helicopters from 10 Tactical Air Group helped with mapping and charting from Nanisivik on Baffin Island, DND tasks on northern Ellesmere Island and US naval exercises in the Thule area. In addition, helicopter support was provided to Mobile Command for exercise *Northern Viking* and the Governor General's tour of Northern Quebec. Approximately 2 000 helicopter flying hours were devoted to these projects.

The Distant Early Warning (DEW) Line, consisting of four main sites and 17 auxiliary sites, provided a military presence in the arctic. These installations stretch from Cape Dyer on the east coast of Baffin Island to Komakuk Beach near the Alaskan border. While all sites are operated by civilians, under United States Air Force contract, Canadian Forces members are at the main sites. The airfields at Tuktoyaktuk, Hall Beach and Cambridge Bay are operated by Transport Canada.

Air Reserve activities in the North continued at a significant level. Besides support to mapping and charting, reserve aircraft provided a communication and re-supply capability during the initial stages of airfield construction at Pond Inlet and Spence Bay. Arctic training by reserve squadrons allowed personnel to conduct northern operations including search and rescue and provide essential flying services to Northern Region Headquarters and northern communities.

Military Engineering

Airfield construction was carried out at two locations in 1978, Pond Inlet and Spence Bay. The Pond Inlet operation was completed on Sept. 6. The official handover of the airfield from DND to Transport Canada and the community of Pond Inlet was September 7. The finished airfield has a 1 340 m by 90 m gravel runway, an access road to the community, aircraft apron, taxiway, fuelling area and a gravel pad for a terminal building. Spence Bay has a 975 m by 60 m gravel airfield, completed in 1978 except for final grading. Spence Bay construction in 1979 will include final grading of the airfield and completion of the apron, taxiway, fuelling area, gravel pads for a terminal building and meteorological - landing aids. The construction period for both airfields was May to September 1978. A total of 23 military people and nine civilians were involved at Pond Inlet and 25 military and seven civilians at Spence Bay. The completion of Spence Bay will mark the end of DND's involvement in Arctic Airfields Construction Program. Any new airfield construction involving DND and Transport Canada will be under the new Memorandum of Understanding dated 1976.

Phase IV of the project to rehabilitate CFS Alert continued in 1978 with the construction of a water treatment plant, a 450 000 L water reservoir, the foundations for an operations building and a Petroleums, Oils and Lubricants (POL) system including four 225 000 L storage tanks. Quarry and crushing operations continued during the season to supply crushed gravel for the airfield and various other projects. Construction was carried out between May and November. The 1978 CFS Alert project was conducted in three phases of approximately eight weeks each, employing 136 tradesmen and field engineers.

The Mapping and Charting Establishment (MCE) surveyed 165 000 km² of the Borden and Brodeur Peninsulas of Northern Baffin Island between June 3 and August 31, 1978. Approximately 75 survey and support personnel and eight aircraft were used, operating from a base camp at Nanisivik. Survey control for the eventual production of 160 1:50 000 scale topographic maps was obtained.

Plans for 1979-80

Plans for fiscal year 1979-80 include continuing forces employment and career briefings in the northern communities and tours of military training facilities for northerners. Additionally, native northerners will be offered special training courses in aircraft mechanics, power plants operation and seamanship. They will be conducted at Canadian Forces training establishments.



Native Northerners studying Seamanship aboard HMCS Oriole

Maritime Forces

The replenishment ship *HMCS Preserver* and the diving support ship *HMCS Cormorant* will be in the North during August. Both ships will visit Resolute Bay. *HMCS Cormorant* will remain in the North until late September.

Maritime sovereignty and surveillance air patrols will continue for 1979-80 at a reduced level of activity. Support to other government agencies will continue to be provided.

Land Forces

Three more *Northern Viking* exercises will be conducted during 1979-80. Each mobile command formation will plan and execute one company-sized exercise during the winter. The formations with specific northern related tasks will also conduct a reconnaissance for senior officers.

Long-range communications exercises will also be conducted, using many northern settlements as bases.

Air Forces

Hercules aircraft will provide regular scheduled service to Alert, Inuvik and Yellowknife. Buffalo and Hercules will be used during the spring, summer and early fall to provide support for the Northern Airfield Construction program, and mapping and charting.

CF-5 tactical fighter aircraft will fly operational support missions. The 434 Squadron, with a tanker and four CF-5's, will go to Elmendorf AFB, Alaska, in April and conduct photo reconnaissance en route.

Air Demonstration Squadron 431, the *Snowbirds*, will make its annual tour of Canada's North in May, 1979. Performances will be given at Whitehorse and Watson Lake in the Yukon and Hay River and Yellowknife in the Northwest Territories.

Air Reserve plans include training exercises, flying services to Northern Region Headquarters and support for the ongoing arctic survey. This will involve extensive use of helicopters for mapping and charting.

Military Engineering

With the aim of completing the Baffin Island survey, a major survey operation is proposed in the summer between 68°N latitude and Bylot Island. The Spence Bay airfield will be completed and handed over to Transport Canada on August 30. Phase V of the project to rehabilitate CFS Alert will continue. Major projects will be the construction of an operations building, aircraft parking apron, POL handling facilities and an antenna anchorager.

Research and Development

Responsibilities

Responsibility for scientific policy and for the control and management of DND scientific activity lies with the Chief of Research and Development (CRAD). In the North, CRAD ensures the availability of technology to solve problems of equipment and operations. Research is undertaken on a variety of projects to acquire new knowledge and test and evaluate the system proposed for use in low temperature areas.

Review 1978-79

Five of the six Defence Research Establishments across Canada were involved in research relevant to northern activities. In addition, research contracts were awarded to a number of firms and grants made to two Canadian Military Colleges.

Defence Research Establishment Pacific (DREP) is engaged in research to detect submarines in Arctic waters. Actual activity in the North was not high this year as a precedence was given to analysis of data previously collected. Two reconnaissance flights in the western arctic were carried out in preparation for 1979-80 work activity. A party spent two weeks in August investigating geomagnetic activity in the polar cap.

The 1979 field season has started and by the end of March two field parties had established ice camps in the western arctic for electromagnetic and acoustic measurements.

Defence Research Establishment Suffield (DRES) conducts research on problems concerned with protection against biological and chemical warfare. These programs complement those of DREO. Other programs include range clearance technology, field applications of explosives and effect of explosives. In the field of military engineering, DRES contracted with the Department of Civil Engineering, University of Alberta, to establish a centre of excellence for northern geotechnical engineering. This means the wide expertise developed by the university in support of civilian applications can be applied to military problems. Initial emphasis is being placed on evaluation of engineering geophysical methods, studies of underground cavities and caverns in permafrost, and vibratory loading of frozen ground.

Assistance was provided Royal Military College (RMC) to carry out trials comparing the military explosive DM12 with commercial explosives in permafrost. A total of 57 tests were completed using 23 kg of explosive for each test. The results are being analyzed at RMC.

Defence Research Establishment Valcartier (DREV) initiated tests to qualify the CRV7 rocket weapon for use in many climates. The arctic climate tests are being carried out at Alert. The tests involve delivery of rockets to Alert, monitoring the thermal environment experienced in the storage area, cycling the rocket motors through other climatic conditions and returning them to DREV for proof testing. No firings of rocket engines are planned at Alert. This environmental test series is planned to extend into 1986.

DREV is providing support to Environment Canada's search for oil disposal methods applicable to its Arctic Marine Oil spill Program (AMOP). DREV is investigating various incendiary devices for the ignition and burning off of arctic oil spills.

Defence and Civil Institute of Environmental Medicine (DCIEM) is concerned with performance of the military man. DCIEM research and development studies human responses to extreme heat, extreme cold, high altitude and acceleration, physical fitness, aerospace life support systems, infection and immunity and deep diving. Tasks include behavioural and bio-science investigations relating to sea, land and air operations.

Analysis of cold stress tests on humans, carried out at the Eastern Arctic Scientific Resource Centre (EASRC) of the Department of Indian Affairs and Northern Development, at Igloolik, NWT, were completed in 1978.

Reports and publications relevant to Exercise *Kool Stool II*, specifically on cold acclimatization and sleep in the cold, were issued during this last year. DCIEM personnel also monitored CF Exercise RAPIER THRUST in western Canada which was further experimentation on similar subjects.

Work continued on development of a cold stress meter to give a single reading on cold stress imposed on humans. This device is now patented in Canada, the United Kingdom and the United States.

DCIEM facilities include climatic chambers, where work has continued on automatic recording of body temperatures at a variety of ambient temperatures. Some effort has gone into the development of a cold wind facility to determine the nature of convective cooling of military personnel in cold regions.

Defence Research Establishment Ottawa (DREO) carries out scientific activities on protection against nuclear, chemical and biological hazards and the natural environment. Other programs include Research and Development on vehicle mobility, power sources, defence electronics and remote sensing.

Scientists from the Protective Sciences Division, DREO participated in two exercises in the Canadian North to evaluate new winter protection methods.

Exercise *Rapier Thrust* gave scientists an opportunity to study the infantry in a fairly large scale winter exercise. The scientists accompanied the infantry on several patrols to appraise experimental items of protective equipment. These included: the American XM 29 gas mask, a DREO prototype mask, a clothing system designed to be variable in its degree of insulation, giving more insulation to a sedentary soldier and less to one working hard, a convertible backpack-toboggan that enables a soldier to carry or pull his personal load.

Four Protective Sciences Division personnel went to CFS Churchill, Manitoba, to conduct further tests on the clothing system and the backpack-toboggan in an exercise called *Polar Guard*. Here the weather was severe with temperatures down to -37°C with wind chill of 2500 to 2600 watts per square metre. Both the clothing system and the load carrying system were proved satisfactory.

Field trials to evaluate garments for protection of personnel against biting flies were carried out at Petawawa. It was found that normal clothing could not be penetrated by blood-seeking insects and a separate repellent treated mesh hood gave good face protection without vision interference. Bush clothing treated with permethrin insecticide reduced the biting fly swarm and formed a promising combination when worn with the repellent treated hood. Two insect growth control compounds, methoprene and dimilin, showed promise in field tests for larval blackfly control. A simple non-mechanical trap for adult blackflies was given preliminary assessment.

Studies of vehicles mobility in fresh and aging snow continued.

Sensors to the measure ignition and fuel systems during low temperature vehicle starting were designed, installed, tested and used. A series of cold weather trials done in the NRC cold chamber on an armoured personnel carrier (diesel engine) and on a 1 1/2 tonne truck (gasoline engine) demonstrated the low-temperature starting limitations for these two types of engines and identified a need for research in the field.

Comparative assessment of the potential for employing nuclear, fuel cell, thermal engine and battery systems as power plants for submarines and submersibles have been extended in anticipation of increasing interest in underwater military activities in the North. All of the suitable systems will require considerable development to make them useable in submarines smaller than the present-day nuclear craft.

Both wind turbine - battery and propane-fuelled thermo-electric systems have been identified as potentially suitable power sources for low power and long unattended operations associated with communication systems for the North. Studies on these systems are complete and the recommendations made.

A study directed towards providing improved lead-acid batteries with low temperature capability is continuing. The examination of the cranking characteristics at low temperatures has revealed performance improvements in present-day batteries. New lines of investigation concerning low-temperature charging are being explored.

Improved nickel-cadmium aircraft batteries, which resulted from studies at DREO, continue to be flight-evaluated. Some laboratory work is being conducted to better define the low temperature capabilities of these improved batteries.

The on-going evaluation of advanced primary batteries capable of operation down to -40°C is now focussing on lithium - sulphur-dioxide and lithium/thionyl-chloride cells. Studies are in progress to define the conditions under which cells may be hazardous. A primary battery development program to extend the operational capabilities of radar transponder and a High Frequency (HF) manpack radio to -40°C have been formulated.

Studies are under way to incorporate zinc electrode with improved low temperature capability into primary manganese-alkaline cells to extend the practical operating range of manganese-alkaline cells to -40°C. Twice the normal capacity at -30°C has been demonstrated.

The military exercise *Rapier Thrust*, in northern British Columbia, provided another opportunity to study the actual practice of an operational group's utilization of modern methods and technology. The observations focused on the pressing problems of supplying power to portable electronic equipment under field-operational conditions, and the fact that the user often gets to the field without the best equipment for the job.

DREO has provided an optical recorder and correlator for the SEASAT "A" Synthetic Aperture Radar receiving station at St. John's, Newfoundland. Although the satellite has died, data received before have been recorded. Two DREO scientists participated in the World Meteorological Office workshop on the remote sensing of sea ice.

During 1978 investigation of the feasibility of using the ANIK satellite in communicating with the High Arctic continued. Data was obtained on the fading characteristics of the signal using a terminal on high ground near the Eureka airstrip. The results showed promise and the work of evaluating signal characteristics will be carried into 1979.

Plans for 1979-80

The research program carried out is continuing and much will be pursued in 1979-80. However, emphasis does change as results of research are adopted.

Research Contracts 1978-79

Control Data Canada Ltd. — Feasibility study on acoustic data management and analysis systems.

MacDonald, Dettwiler and Associates Ltd. — Feasibility study for a field data retrieval, editing and display system.

Atmospheric Dynamics Corporation — Computation of winds, ice motion and wind waves in Barrow Strait and vicinity, Phase II.

Applied Microsystems Ltd. — Development of a submersible low power digital tape recorder for remote data acquisition and storage.

Control Data Canada Ltd. — Development and evaluation of various algorithms required for acoustic detection systems in the Canadian arctic.

University of Alberta — Establishing a centre of excellence for northern geotechnical engineering.

Rodrol Instrumentation — Operational physiological monitoring system.

Canadian Hydrogardens Ltd. — Nutrient value in waste treatment.

Ontario Research Foundation — Inflatable sleeping bag.

Reuter Strokes Canada Ltd. — Radio pill for human core temperature.

University of Toronto — Fat loss induced by exercise in cold.

University of Toronto — Fat loss induced by exercise in cold (animals).

Ontario Research Foundation — Metallized plastic film as insulation in military sleeping bag.

Extramural Grants for 1978-79

Royal Military College — Thermal effects on Permafrost; evaluation and stabilization of highly-compressible terrain for use in V/STOL landing sites; and cratering in frozen soil.

College Militaire Royal — Optimal search pattern studies for search and rescue.■

National Energy Board

NEB

Northern Pipeline Act

The Northern Pipeline Act, passed April 12, 1978, provided authority for construction of the natural gas pipeline in Canada along the Alaska Highway and for creation of a Northern Pipeline Agency to oversee construction. Certain terms and conditions in the legislation require the agency to seek approval of the NEB and the Minister responsible for the Northern Pipeline Act.

The board's responsibilities relate to the rate of return schemes, financing and tariffs. The Northern Pipeline Agency seeks assistance from NEB in carrying out its mandate on engineering design and environmental and socio-economic matters. Under an agreement between the federal government and Foothills Pipe Lines (Yukon) Ltd. (the Dempster Link Agreement), the board oversees the conduct of studies leading to an application to construct a lateral line along the Dempster Highway from the Mackenzie Delta to Whitehorse. This application is to be filed by July 1, 1979.

Review 1978-79

Public Hearings

During 1978 the board conducted nine public hearings. Here are some highlights of those hearings.

At the request of the Minister of Energy, Mines and Resources, NEB held a public inquiry into a range of possible oil supply situations that might occur over the next 10 to 15 years. In response to the Board's Hearing Order, 79 written submissions addressing the topic were received from industry, public interest groups and individuals. Sixty-six oral presentations were made at the board's public inquiry, held during May and June in Calgary, Vancouver, Halifax and Ottawa. The findings were published in a report entitled "Canadian Oil Supply and Requirements" September, 1978.

A hearing was held to consider applications by Westcoast Transmission Company Limited for construction of pipeline and gas plant facilities to gather, process and bring to market natural gas produced in the Grizzly-Bullmoose-Sukunka and Silver-Dahl areas near Fort St. John in northeastern British Columbia. Both applications were approved.

A public inquiry was held into current and future natural gas supply and requirements in Canada. The inquiry opened in Calgary October 11, 1978, continued in Vancouver, Halifax, and Quebec, and concluded in Ottawa December 4. A total of 89 parties participated. The board will release a report on its findings in 1979. ■

Responsibilities

The National Energy Board has two principal roles: to regulate specific areas of the oil, gas, and electrical utility industries and advise the government on development and use of energy resources.

The board is a regulatory body, granting certificates of public convenience and necessity for construction or operation of interprovincial and international petroleum pipelines and international electric power lines. It also issues licences authorizing export or import of gas and oil or the export of power. The board issues safety orders for pipelines, regulates rates, tolls, and tariffs charged by the oil and gas pipeline companies under the board's jurisdiction and approves pipeline utility crossings.

In its advisory role, the board may hold inquiries into particular aspects of energy and prepare reports for government, parliament, and public. It also carries out studies and prepares reports for the Minister of Energy, Mines and Resources.

In addition, the board administers certain provisions of The Petroleum Administration Act, passed June 19, 1975. This Act empowers the federal government to impose a charge on the export of crude oil and certain petroleum products; provides compensation for certain petroleum costs and regulates the price of Canadian crude oil and natural gas in interprovincial and export trade.

National Film Board

NFB



Responsibilities

The National Film Board produces motion pictures, film loops, film strips, slide sets and still photo exhibits about the Canadian North, its peoples and their activities. The NFB also distributes these materials in Canada and abroad and distributes in the North material which interprets Canada and explores issues of national interest.

Review 1978-79

The Film Board provided a variety of services to several native communication societies under an arrangement with the Department of Indian Affairs and Northern Development. Under this arrangement, \$61 329 was expended in services and supplies, \$27 641 of which was reimbursed to the National Film Board by DIAND.

A six-week training course at NFB was arranged for the coordinator of the Pond Inlet Community Television Society (PIC-TV) in May and June of 1978. An employee of La Ronge Community Television in Saskatchewan also participated in the course. A training syllabus was designed and coordinated for the two trainees.

PIC-TV went on the air locally in October, 1978, using 1/2-inch black-and-white video tape. By December the society had raised the funds to purchase 3/4-inch colour video equipment. In response to a request from PIC-TV, an NFB technician installed the equipment and provided training in its use. Colour broadcasting first occurred in early February and now occurs on a regularly-scheduled basis of half an hour a week.

The NFB has maintained a relationship with the Nunatsiakmiut Society of Frobisher Bay for several years. This year, the NFB assisted the society in switching its regular production from super 8 film to video.

The Challenge for Change program maintained a regional representative in Yellowknife who worked with several native groups in the NWT on the production of VTR programs. This representative also travelled extensively in the NWT screening films of interest to native organizations and settlements.

The NFB distributes a collection of films called the Outpost Film Library. The board also undertakes a number of activities to stimulate greater use of this resource, particularly in the field of education.

Funds from the NFB's Education Support Program were used to provide new films of particular relevance to a newly-developed curriculum for the Cree School Board of Quebec. It was agreed that teaching coordinators would assist in selecting films for the collection. NFB's collection of CBC-produced titles will also be made available during the 1979-80 school year. A newly-designed distribution system which will cut down the transit time for films and avoid duplication will be introduced.

A special Outpost Library Film Catalogue was printed to facilitate use of films.

The Ottawa office outpost film library continues to serve the Baffin District. Distribution of the film, *The Games of the XX1st Olympiad* was coordinated by the Audio-Visual Library of the Gordon Robertson Education Centre at Frobisher Bay. Bookings out of Ottawa remained steady and were supplemented by a deposit of 100 titles at the facility in Frobisher Bay.

The Edmonton outpost library, which serves the MacKenzie District, reports that film bookings are up from 50 a month last year to 65 per month this year.

The Winnipeg office, which serves the Keewatin District, sent a distribution representative specializing in education to visit Pequis, Norway House and The Pas, as part of an on-



going consultation with the Brandon University Northern Teacher Education Program. Funds from the Educational Support Program were used to finance the trip.

The BC office, which serves the Yukon, reported that the Whitehorse Library has decided to take up an offer to make \$14 000 worth of new films available to the Yukon territory. In the past year, 3 000 bookings were reported by the Whitehorse Library.

Plans for 1979-80

Complete collections of CBC films will be made available to the Yukon and Northern Quebec – the two areas of greatest activity. Public screenings will be organized in the Yukon and the distribution system of local libraries evaluated.

Input of the Cree School Board will be sought to help select the best films for the Québec outpost film library.

Two DIAND-sponsored films are in production, *The Canadian Reindeer Industry* and *The Eskimo Dog – Kingmik*, produced by Inuk Films, Yellowknife, NWT. *Ameshkuatan – Les Sorties du Castor*, a 16 mm colour film, was completed in French.

National Museums of Canada

NMC



Ross's Gull, *Rhodostethia rosea* on its' nest on an islet in Penny Strait, N.W.T. This is the first known nesting of Ross's Gull in North America. The previously known breeding range of this rare gull is in northeastern Siberia.

Photo Credit: S.D. MacDonald, National Museum of Natural Sciences.

National Programs Branch

Canadian Conservation Institute

Responsibilities

The Canadian Conservation Institute, established in 1972, provides conservation services for collections in Canadian museums, galleries and archives. It also offers conservation training and carries out scientific research into conservation problems. Priorities are established by five regional advisory committees.

Review 1978-79

The major project was participation in planning and working as part of the field team at Dealey Island where a survey was conducted in 1977 by the Prince of Wales Northern Heritage Centre, Yellowknife, to assess conservation problems likely to arise in excavating the large cache left by HMS Resolute in 1853. On-site participation was followed by work at the Heritage Centre immediately afterwards and later assistance in Yellowknife with preparation of artifacts.

Assistance was provided at Herschel Island, Yukon Territory, with problems of artifact preservation in the face of active site erosion. Suggestions were made and samples collected and evaluated. Iron artifacts from excavations on Ellesmere Island, NWT, were analyzed to assist with identification or origin.

Plans for 1979-80

Work on scientific examination and conservation of artifacts already recovered from excavations in the Yukon and Northwest Territories will continue at the headquarters laboratory.

Museummobile Program

Responsibilities

Museummobiles exhibit artifacts are related materials in communities removed from major museums. Each museummobile caravan has three 45-foot trailers. Displays depict the geographic, archaeological, social and natural history of a Canadian region.

Three museummobile caravans with stories of Canada North, Canada West and Atlantic Canada visit community centres, schools, homes for the elderly, correctional institutions and shopping plazas across the nation.

Review 1978-79

The Canada North Museummobile toured the Northwest Territories from August 22 to September 29, 1978, making stops at Yellowknife, Detah, Rae, Fort Providence, Fort Smith, Fort Simpson, Hay River, Fort Resolution and Pine Point. An estimated 50 per cent of the population of these communities visited Canada North.

During August 31 to October 24, 1978, Atlantic Canada toured the Yukon visiting Watson Lake, Ross River, Faro, Mayo, Dawson, Pelly Crossing, Carmacks, Carcross, Teslin, Whitehorse, Haines Junction, Burwash Landing and Beaver Creek.

Plans for 1979-80

Due to financial restraints the Canada North Museummobile has been temporarily deactivated. Canada West and Atlantic Canada Museummobiles will be touring Quebec and British Columbia respectively.

Museum Assistance Programs

Responsibilities

The Museum Assistance Programs is a source of financial and technical assistance to Canadian museums, institutions and organizations seeking to preserve and display the Canadian cultural heritage. Under these programs financial and technical assistance is provided toward upgrading, renovating and in some cases construction of museum facilities; the registration of collections; the training of museum professionals; and the production and circulation of exhibitions.

Review 1978-79

A grant of \$20 000 was provided to the Northern Life Museum and National Exhibition Centre in Fort Smith under the Core-funding Assistance Program. As a result, the institution was able to offer Fort Smith a varied program.

The Museum Assistance Program researched the unique problems of building and operating museums in the North. As an aspect of this research, data were obtained on museums constructed and operated in northern countries such as Finland and Denmark. A manual is planned on the unique problems facing museum construction in the North.

Plans for 1979-80

A grant of \$14 500 has been approved to enable the Northern Life Museum and National Exhibition Centre in Fort Smith to structure and undertake public program activities in 1979-80. The Yukon Historical and Museums Association will receive a grant of \$6 000 to undertake a survey of training needs in the Yukon.

Research will continue on the problems of museum architecture and on the conservation of collections in northern institutions. A survey of the architectural and conservation aspects of all museums in the North is expected.

National Museum of Man

Archaeological Survey of Canada

Responsibilities

The Survey undertakes research and rescues archaeology pertaining to the prehistoric occupation of Canada.

Review 1978-79

An interdisciplinary project in Old Crow Flats, Yukon, involving scientists from various institutions, led to the discovery of several artifacts that indicated an age of more than 50 000 years, nearly doubling the time depth of northern archaeology. Contracts were let for collection of samples for amino acid racemization analysis and on sediment structures.

An archaeological survey of the Aston Bay area, Somerset Island, was conducted using that area as a test of predictive techniques for locating sites.

Research on human osteological data in western Cumberland Sound was done under a cooperative program with the Pangnirtung Inuit Council.

Plans for 1979-80

Detailed archaeological reconnaissance will be conducted in a final search for primary archaeological deposits in Old Crow Flats, Yukon. A survey of eastern Great Bear Lake will determine the location, nature and frequency of archaeological sites in that area relevant to establishing a regional prehistory. An archaeological excavation of a Thule culture village is planned for the summer of 1979 in Bathurst Island, NWT.

Canadian Ethnology Service

Responsibilities

The Canadian Ethnology Service documents the cultural heritage of the native peoples of Canada, including research, collection, analysis and dissemination of information on the social, linguistic and material culture of the Indians and Inuit of the Yukon and Northwest Territories.

Review 1978-79

The on-going staff research on Athapaskan land use, territory and special organization continued.

Research projects contracted by the program for studies on the cultures of the Indian and Inuit peoples included a transcription, translation and analysis of northwestern Athapaskan Tutchone and Tagish mythology and oral tradition; a sound and film study of the drum dance of the Netsilik Eskimos of Pelly Bay, NWT; a space and time study among the Igloodik Eskimos of the NWT; and an ethnographic and ethno-historic study of the Mackenzie Eskimos on the Yukon coast.

Plans for 1979-80

The foci of Inuit staff research will be on language, material culture and subsistence activities of the west coast of Hudson Bay. Athapaskan staff research will continue the work of last year.

Three research projects will be contracted for studies among the Inuit of the Northwest Territories. They are: kinship study to clarify the relationships among Cape Dorset graphic artists; a study on land navigation, route finding and special orientation among the Inuit of Gjoa Haven; and a linguistic study of Inuktituk spoken in Arctic Bay.

National Museum of Natural Sciences

Vertebrate Zoology Division

Vertebrate Ethology Section

Responsibilities

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through comprehensive faunal surveys, field research programs and the maintenance of important collections. The division cooperates with other government agencies and scientists of other countries interested in the North.

The Vertebrate Ethology section undertakes detailed, long-term studies at the NMNS High Arctic Research Station established at Polar Bear Pass on Bathurst Island, NWT, in 1968, in collaboration with the Polar Continental Shelf Project. The section investigates the relationship between species of arctic animals and the behavioural adaptations that enable them to survive in High Arctic environments.



One of the displays in the Canada North Museumobile

Review 1978-79

The research station was in operation from May 7 to September 4, 1978. The following projects were conducted.

Behaviour and Ecology of Muskoxen: Although the major behavioural investigation of muskoxen has ended, general observations on behaviour and population ecology have continued in cooperation with researchers from the University of Alaska. Information on population structure, activity patterns, and forage ingestion for the Bathurst Island muskoxen is being analyzed and compared to the results of field studies carried out in arctic Alaska. These cooperative and comparative studies will help provide information on the energetic relationship of re-introduced muskoxen to their food base. Behavioural observations at Bathurst Island in 1978 concentrated on frequency and duration of suckling and associated behaviours. A snowmobile survey on June 5, covering about 100 km located 104 muskoxen in seven herds, 21 per cent of which were yearlings.

Reproductive Biology of Muskoxen: Through participation in four hunts with the Inuit of Grise Fiord, NWT, specimens from 26 muskoxen were obtained for physiological and histological studies. In a cooperative program between the Inuit hunters, the NWT Fish and Wildlife Service and Agriculture Canada, analysis is now being done on the muskox reproductive tracts in relation to the long-term field observations of rutting and maternal behaviour.

Behaviour of Wolves and Peary Caribou: Wolves were observed on 18 occasions during the summer, with the largest pack being only three individuals. After July 6, only single wolves were seen. The wolves concentrated their hunting efforts on the abundant varying lemmings and only three brief encounters with muskoxen were seen, all involving single wolves. Predation of the nests of Snowy Owls, Snow Geese, and King Eiders was documented. Peary Caribou were observed more frequently than during 1977 with a possible maximum of 42 individuals. The largest number seen at one time was a herd of 13 in early July. Three yearlings were the only young animals seen.

Ecology of Varying Lemming: The 1978 season as marked by high numbers of lemmings in Polar Bear Pass. The abundant lemming population contributed to an increased frequency of arctic fox and weasel observations. The population remained high throughout the summer despite heavy predation by large numbers of foxes, jaegers, and Snowy Owls.

Breeding Bird Census and Banding Program: Of the 33 species seen in Polar Bear Pass in 1978, 17 were recorded as nesting. Information on breeding biology and behaviour was obtained at 128 nests, down slightly from 1977. The most successful of the nesting species were Black-bellied Plovers, Glaucous Gulls, Snowy Owls and Snow Buntings. The banding program continued with 103 birds of 11 species banded this year, including 38 young Snowy Owls. Four previously-banded King Eider females nested within 100 m of their 1977 nest sites.

Nest-site Selection in Black-bellied Plover: Eleven Black-bellied Plover nesting sites were located in the study area and analysis of 17 features of each site was undertaken to determine what factors influence nest placement. Vegetation cover around each site was also analyzed. Nesting sites were unevenly distributed and large areas of apparently suitable habitat were not used. Nest-site selection appears to depend on a complex of environmental and behavioural influences.

The Ecology and Behaviour of Ivory Gulls on Seymour Island: This four-year project described all aspects of breeding behaviour and its relation to ecological factors in the Ivory Gull's High Arctic environment. The camp facilities used during the program were successfully removed in June, 1978, before the birds arrived at the colony. On July 26 the Seymour Island colony was revisited to determine nesting success. At least two-thirds of the colony had been destroyed by polar bears and only 95 occupied nests as 151 adult birds remained. A special report was prepared for Environment Canada on the status of the Ivory Gull as a potentially endangered species.

The Behaviour and Ecology of Sea Birds on the Islets and Polynias of Penny Strait: Special concentrated studies and surveys were carried out in Penny Strait between Resolute Bay and Grinnel Peninsula. This area contains many small islands in or near polynias where shallow water and upwelling currents provide a rich and reliable food supply for marine birds and mammals. Hundreds of pairs of Arctic Terns and Common Eiders nest in this area. The most spectacular discovery was locating the first known nesting sites of Ross' Gull in North America. The previously known breeding range of this rare gull was northeastern Siberia. Only seven pairs represent the known breeding population of Ross' Gulls in Canada. The exact location of the colony is still restricted information.

Plans for 1979-80

Observations of muskoxen, wolves, caribou, and lemmings will be carried out on a monitoring level only. The muskox behaviour project is now in the writing phase, with production of a book on the muskoxen of Polar Bear Pass the major objective.

The Breeding Bird Census and Banding Program will continue in the primary research area of Polar Bear Pass. Records of surface weather will continue and be interrelated with the studies of animal populations. A satellite camp will be established to study the behaviour of Ross' Gull at its breeding grounds in Penny Strait.

Paleobiology Division Quaternary Zoology

Responsibilities

The division collects Pleistocene vertebrate material from the Yukon and describes it in an attempt to reconstruct the vertebrate history of the region during the ice age.

Review 1978-79

From August 10 to August 25, Pleistocene mammal specimens were collected in the Dawson and Sixtymile areas of the Yukon. Highlights of the work were the discovery of a series of ancient ground squirrel nests and the mandible with teeth of an approximately one-year-old mammoth. A paper dealing, in part, with the Yukon work: "Faunal exchanges between Siberia and North America - evidence from Quaternary land mammal remains in Siberia, Alaska and the Yukon" was published.

Plans for 1979-80

Plans for this period involve collection of Pleistocene vertebrate fossils in the Dawson and Sixtymile areas of the Yukon Territory.■

National Research Council of Canada

NRC



Push-moraine of the Thompson Glacier, Axel Heiberg Island, as photographed in 1977.

Responsibilities

National Research Council investigates various phases of pure and applied sciences in northern Canada.

Herzberg Institute of Astrophysics

Review 1978-79

Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international worldwide network program. The data are sent on a regular basis to the World Data Center for distribution to scientists.

Plans for 1979-80

The cosmic ray monitoring program will continue at the same level.

Division of Chemistry

Review 1978-79

Identification of additional deposits of natural gas hydrates in permafrost regions of Canada during the year led to increased interest in their chemical and physical properties. Laboratory studies of methods of identifying and analyzing gas hydrates have been pursued. First indications are that ^{13}C nuclear magnetic resonance may provide a useful method for the analysis of hydrate present in pressurized cores. The speed of sound and electrical resistivity appear to be so similar for gas hydrate and ice that identification of hydrate deposits by conventional exploration and well-logging methods is made difficult.

Plans for 1979-80

Gas hydrate studies will continue.

Division of Physics

Review 1978-79

A joint project with Environment Canada and the Technological Universities of Zurich and Vienna produced large-scale stereo-orthophoto maps (scales 1:5 000 and 1:10 000) of various glaciers on Axel Heiberg Island, NWT, from photographs taken during the summer of 1977. These glaciers were earlier mapped by the Photogrammetric Research Section from photographs taken in 1961. One of the purposes of the project is to monitor the changes in the snow and ice cover over the 1961-1977 period.

The aerial triangulation of the 1977 photographs was performed on the NRC Anaplot. The digitizing of the glacier surfaces and their immediate surroundings was completed at the Photogrammetric Research Section. The digital information was used to produce stereo-orthophotos on the Wild Avioplan OR1 at the Department of Photogrammetry of the University of Vienna.

Plans for 1979-80

The stereo-orthophotos generated in the project will be used for glaciological and cartographic purposes at the University of Zurich and the Photogrammetric Research Section. Equipment for interpretation and mapping operations based on stereo-orthophotos, developed at NRC, will be used in these investigations.

Division of Building Research

Review 1978-79

Laboratory and field studies on saline ice characteristics and behaviour were conducted. The influence of growth conditions on crystal structure and salinity was investigated for first year sea ice from Pond Inlet. Heat budget measurements were made during the construction of one of Panarctic's ice platforms.

The relation between growth conditions and built-up ice platforms was studied and measurements were made on ice behaviour around the marine terminal on Strathcona Sound.

Permafrost ground temperature measurements were made at a network of sites extending from Thompson, Manitoba, to Baker Lake, NWT, and at Alert, NWT, to determine the distribution of alpine permafrost.

The effects of frost on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone was a vital part of laboratory research. The work emphasized the nature of the interrelationship of pressure, freezing temperature and heave rate. These studies have produced a means of interpreting heave rates in evaluating frost susceptibility of soils. In conjunction with this work, numerical and laboratory model studies of frost heave and the use of heating cables for chilled gas pipelines were undertaken.

Observations were continued at several sites on the Dempster and Mackenzie Highways in the YT and NWT to assess the long-term performance of insulated and uninsulated embankments constructed on permafrost. Periodic pile foundation observations at the Eagle River bridge on the Dempster Highway were made. Studies of building foundations at Alert were begun.

In situ measurements of the strength and deformation of frozen ground were made at an Inuvik test site. Laboratory studies of the mechanical and thermal properties and deformation behaviour of frozen soils and model piles in frozen ground were continued.

Plans for 1979-80

Field observations will be continued on foundations for various structures and facilities built on permafrost. Initial installations and long-term experiments of full scale foundations will begin at the Inuvik test site. The program of permafrost ground temperature measurements will be expanded with the addition of new sites at various locations.

Laboratory studies of frozen ground, frost action in soils, sea ice and permafrost foundations will be continued at about the same level.

Division of Electrical Engineering

Review 1978-79

A small project was initiated to measure sea ice thickness from helicopters. An on-going literature search of related theoretical and experimental work, as well as monitoring other Canadian developments in the field, was continued. The experimental work in the past year concentrated on the construction of a test model of a video-pulse radar operating at 10 MHz. The division is collaborating with C-CORE to evaluate the radar in the High Arctic in March.

Plans for 1979-80

If the results of the trial are positive, plans are to incorporate a microprocessor signal processing unit into the system. If the results prove unfavourable, plans are to develop a similar system, but at 100 MHz.

Division of Mechanical Engineering

Review 1978-79

Research was carried out by the Low Temperature Laboratory on formulation and manufacturing techniques to produce a suitable aqueous base model ice, representing to scale the properties of Arctic sea ice.

The Control Systems and Human Engineering Laboratory initiated a study into the effects of 24-hour darkness and 24-hour light on human circadian rhythms. This study uses a pursuit tracking task, the stressalyser, developed in this laboratory. Performance on it has varied with time of day. The tests are carried out on radio operators and associated personnel stationed at Resolute Bay, NWT. Comparisons are made between observations at the beginning and end of the three-month dark period. Data collected during winter 1978-79 will be supplemented by comparable data collected during summer 1979.

The Marine Dynamics and Ship Laboratory completed model experiment work for Dome Petroleum on an arctic class 10 icebreaker. Using a radio-controlled model of a liquified natural gas arctic class carrier the Laboratory did tests for Melville Shipping Ltd. on avoiding icebergs. The instrumentation and automatic data acquisition system on board a pilot arctic class 2 bulk carrier, the M.V. Arctic, was also monitored for the Transport Development Agency. Full scale long-term trials on this vessel in ice-covered waters are expected to yield valuable information on performance in general and ice impact loads for designers, classification societies and regulatory agencies. The laboratory continued to work with the Industrial Research Assistance Program project on "Year Round Arctic Marine Drilling Systems in the Beaufort Sea." This is being carried out by Canmar, a division of Dome Petroleum. Work on improving the manufacture of synthetic ice sheets and model experiment techniques in ice has continued.

The preliminary design specifications for the new Arctic Vessel and Marine Research Institute (AVMRI), with major new laboratories in St. John's, Newfoundland, were developed. The institute is to include the world's largest arctic vessel ice tank where experiments with models of up to 16 m in length can be carried out in uniform ice up to 15 cm thick.

Plans for 1979-80

A model of the M.V. Arctic is being made for experiments and correlation studies. Data will be obtained from the prototype. This work is being carried out as part of the laboratory internal research program. Similarly, model and full scale prediction techniques will be investigated using a model of the Canadian Coast Guard R-class icebreakers. Research on the same model is being conducted in ice tanks worldwide, under the auspices of the International Towing Tank Conference.

Detail design of the AVMRI buildings and tanks will be by Public Works Canada engineering consultants, with the construction phase to commence in late 1979 or early 1980. A number of model experiment facility design investigations are planned during the detail design stage. Much of this will be contracted out to industry.

National Aeronautical Establishment

Plans for 1979-80

The Convair 580, which replaced the North Star aeromagnetics research aircraft of the National Aeronautical Establishment, is expected to carry out a further arctic geomagnetic reconnaissance in May, 1979. This reconnaissance will provide survey data at 20 nm spacing of the Lomonosov Ridge, from the region of Alert to the North Pole. The reconnaissance is being made at the request of the Department of Energy, Mines and Resources.

Space Research Facilities Branch

Review 1978-79

The proposed installation of a rocket launching facility at Cambridge Bay, NWT, was postponed indefinitely. During this period there were no space and upper atmospheric research activities conducted by the branch in the North. The NRC rocket launching facilities at Cape Parry, NWT, were inspected and some on-site equipment maintenance tasks conducted.

Plans for 1979-80

There are no activities planned for this period. Plans are being made for a joint Canada-USA sounding rocket program at Cape Parry during the winter of 1980-81. ■

Northern Canada Power Commission

NCPC

Responsibilities

The Northern Canada Power Commission, a federal Crown corporation, operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis. It is empowered to survey utility requirements and construct utility plants in the Northwest Territories and the Yukon.

The commission is the principal producer of electricity north of 60° and operates the main transmission networks in the YT and NWT. In addition, it operates community heating, water and sewage systems in several locations.

The Commission, by Act, must be self-sustaining. Thus rates charged for utilities must provide sufficient revenue to cover interest on investment, repayment of principal, operating, maintenance and administrative expenses, and a contingency reserve to meet unforeseen expenditures.

Review 1978-79

During the fiscal year, the commission provided retail electric utility service to 49 communities in the NWT, four in the YT, and Field, British Columbia. The commission also supplied wholesale electrical energy to the local electrical distributors in Yellowknife, NWT, and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City, YT. This service was provided from a total of seven hydro-electric plants and 52 diesel-electric plants near the communities receiving electrical service.

The commission supplied retail central heat, water and sewage utility service in Inuvik, NWT, during the past year as well as wholesale central heat utility service to the Government of the Northwest Territories at Frobisher Bay.

A 1966 contract with the Government of the Yukon Territory, giving the commission responsibility for operation and maintenance of the City of Dawson, water and sewage system, terminated December 1, 1978. This responsibility was transferred to the City. This transfer is generally in line with arrangements in the majority of communities in the Yukon and Northwest Territories.

Electrical generating capacity increased by 8 650 kW during the year, including the installation of three 2 500 kW diesel units at Pine Point, NWT, to service the expanding requirements of Pine Point Mines Ltd. Diesel generating equipment installed at NWT communities included Rankin Inlet, 600 kW; Lake Harbour, 300 kW; Broughton Island, 300 kW; and Clyde River, 300 kW. Diesel units totalling 350 kW capacity were removed from Broughton Island, Lake Harbour and Clyde River, NWT.

Power transformer capacity was increased during the year with the commissioning of a new 3.4/4.5 MVA transformer at the substation in Fort Smith, NWT. A new 24/33/42 MVA power transformer was delivered to the commission at Edmonton for installation in 1979 at a new substation to supply wholesale energy at Whitehorse, YT.

Fuel storage capacity of 182 000 L was added at Repulse Bay and Gjoa Haven and 91 100 L at Whale Cove to provide for increasing annual fuel resupply requirements.

A waste heat recovery system from the diesel-generating plant in Igloodik, supplying the space heating requirements of a recreation centre constructed in 1978, was connected December 1, 1978, in line with the commission's policy of expanding the provision of waste heat throughout all areas of operation.

Water reservoir levels on the Snare-Yellowknife hydro system continued to remain somewhat below normal during the past year, making it essential to supplement hydro capacity with increased diesel-electric generation. Below average ambient temperatures during the spring and early summer of 1978 delayed runoff into the system reservoir and maximum storage reached almost 2 m below normal level. Total diesel-electric generation during the year was approximately 23 466 000 kWh, far above the forecast of 10 000 000 kWh.

The Mayo hydro system was also materially affected by unusually low water levels. As a result of the water shortage, United Keno Hills Mines Limited experienced a reduction in energy supply to its mining operation near Mayo. Equipment repairs in late February, 1979, also contributed to reduced hydro generation.

Total electrical generation during the fiscal year was approximately 742 000 000 kWh, comprising 571 000 000 kWh by hydro generation and 171 000 000 kWh by diesel generation. Overall this was an increase of 7 000 000 kWh, over 1977-78. Electrical sales in the Yukon Territory were approximately 310 400 000 kWh, a reduction of 1.9 per cent over the previous fiscal year. However, electrical sales in the Northwest Territories totalled approximately 374 000 000 kWh, an increase of 5.9 per cent over 1977-78. The non-coincidental peak load on all operations during the year was 148 840 kW, a growth of 13.6 per cent over the non-coincidental peak load of 131 000 kW in 1977-78.

Approximately 32 km of electrical distribution lines were strung through the Yukon and Northwest Territories in 1978, providing electrical service to new housing units. Included were several major extensions at Holman Island, Sachs Harbour and Clyde River, NWT, providing service to the community airstrips and to two newly-installed community water pumping stations at Cambridge Bay and Gjoa Haven, NWT. A start was made during the year on construction of approximately 26.8 km of 34.5 kV transmission line to service the Marsh Lake area near Whitehorse. Construction is expected to be completed in the fall of 1979. Extensive upgrading of the electrical distribution systems at Aklavik, Fort Smith and Inuvik, NWT, was carried out during the year to accommodate additional load growth. A major portion of the system at Sachs Harbour, was relocated to permit compatibility with a new government survey.

Extensive maintenance of existing distribution systems was carried out at Field, B.C., Mayo, YT, and at Fort Resolution, NWT, on the 34.5 kV transmission line supplying the community from the Taltson hydro system.

A 10-year electric utility contract, commencing January 1, 1979, was negotiated by the commission with Pine Point Mines Limited. The contract sets out the terms and conditions under which electrical energy is to be supplied to the mining operation at Pine Point, including the assessment of diesel-generating costs necessary to supply a new electric dragline installed by the mining company. Under the terms of the contract, Pine Point Mines Ltd. is assessed the full cost of installation and operation of the new 7.5 MW diesel plant constructed at the mining site.

Plans for 1979-80

The following outlines projected operating statistics for the fiscal year: Estimated electric sales, 732 100 000 kWh; estimated heat sales, $359\,000 \times 10^6$ BTU; estimated diesel fuel consumption, 77 000 000 L; total employee man-years, 330; total number of communities directly serviced by the commission, 55; total number of communities serviced indirectly by the commission, six.

The major capital projects proposed for the 1979-80 fiscal year include: Snare Yellowknife system upgrading; Reconductor portion of 115 kV transmission line supplying Yellowknife; Mayo hydro plant rehabilitation; new 25/33/42 MVA substation at Whitehorse; 34.5 kV transmission line extension near Whitehorse; Atlin Lake Storage Investigation; permanent installation of 2.5 MW diesel unit at Frobisher Bay; relocation of portion of 34.5 kV transmission line supplying Fort Resolution; improved electrical protection on Taltson hydro system; installation of 6 000 BBL fuel storage tank at Baker Lake; improved substation electrical protection for Tuktoyaktuk; installation of 300 kW diesel unit at Fort Franklin; replacement of fuel line at Rankin Inlet; installation of 300 kW modular diesel unit at Arctic Bay; purchase of 300 kW diesel unit for Repulse Bay; installation of 600 kW modular diesel unit at Pond Inlet; installation of 300 kW diesel unit at Gjoa Haven; installation of electrical feeder panel at Spence Bay; installation of 200 kW diesel unit at Pelly Bay; installation of 100 kW diesel unit at Paulatuk. ■

Northern Pipeline Agency

NPA

Responsibilities

The Northern Pipeline Agency was established in April, 1978, under authority of the Northern Pipeline Act. The agency oversees the two basic objectives of the legislation: to facilitate and expedite the efficient planning and construction of the 3 240 km Canadian segment of the Alaska Highway gas pipeline; and ensure that construction and operation of the system will maximize the economic, industrial and energy benefits for Canada, while keeping any adverse social and environmental impacts to a minimum.

The pipeline will carry natural gas from Alaska along a route which closely follows the Alaska Highway through the Yukon Territory and northeastern British Columbia before branching through southern Alberta, British Columbia and Saskatchewan into the United States. A future pipeline along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

Under the Canada-U.S. Agreement of September 20, 1977, the US will pay for all or part of the cost of transporting gas through this pipeline between Dawson and Whitehorse under a formula related to the costs of the Canadian segment of the pipeline and the volume of Canadian gas flowing through the system.

Review 1978-79

Foothills Pipe Lines (South Yukon) Ltd., which will construct and operate the Yukon portion of the Alaska Highway gas pipeline, did field geotechnical, hydrological and wildlife studies to support planning for the pipeline and provide data for the Environmental Impact Statement. This statement, required under the federal Environmental Assessment Review Process, was made public in January, 1979. Foothills Pipe Lines (South Yukon) Ltd. also released details of the preferred Yukon route and conducted community level discussions with Yukon residents to explain route details and receive comments.

A program to train northern residents to fill positions in the operations and maintenance phase of the pipeline project was undertaken by Foothills and at the end of 1978 21 Yukon and Northwest Territories residents were enrolled.

The Northern Pipeline Agency established an office in Whitehorse in June, 1978. This office was headed by an administrator supported by a staff of three. The main operational headquarters is located in Calgary.

Senior officers of the agency made frequent visits to the Yukon to consult with representatives of the Yukon Territorial Government and other agencies. The Governor-in-Council, as provided for by the Northern Pipeline Act, established a Federal-Provincial-Territorial Consultative Council for the pipeline project, which met in Whitehorse for the first time in December, 1978.

Drafts of socio-economic and environmental terms and conditions governing the construction and operation of the Yukon segment of the pipeline were released in October, 1978, and January, 1979, so that comment could be obtained from Yukon residents and others during a series of public hearings. The hearings panel received public comments on the Environmental Impact Statement for the Yukon.

A Yukon Advisory Council was established during the year in keeping with the requirement of the Northern Pipeline Act.

Plans for 1979-80

Foothills Pipe Lines (South Yukon) Ltd. will conduct further field studies along the proposed Yukon route to support its final design process. It is anticipated that the company will submit final route and other plans and designs to the agency for review and approval during the latter part of 1979. Present schedules call for route survey and right-of-way clearing to commence in 1981 with actual construction over the years 1982-1984.

While hearings relating to the proposed socio-economic and environmental terms and conditions for the Yukon were concluded in April, 1978, further hearings are planned during the year by the component of the panel responsible for the review of the Environmental Impact Statement. The terms and conditions will be finalized and, on approval by the Governor-in-Council, become part of the Certificate of Convenience and Necessity issued by the Act. In addition, the main efforts of the agency in 1979-1980 will be reviewing Foothills Pipe Lines (South Yukon) Ltd., plans for manpower, procurement, engineering, and environmental and socio-economic considerations.

In preparation for exercising federal responsibilities, powers, duties and functions that relate specifically to the pipeline project in Yukon, but are presently with federal departments, will be transferred to the agency.

Northern Transportation Company Limited

NTCL



Company's Tukttoyaktuk Terminal

Responsibilities

Northern Transportation Company Limited, a Canadian company, has operated throughout the Mackenzie River Watershed since 1934; along the western Arctic coast and adjacent islands since 1957 and from 1975 has served the west coast of Hudson Bay and Southampton Island in the eastern Arctic.

The company was incorporated under federal legislation and is continued under the Canada Business Corporations Act.

The company's route system extends over 8 000 km. It forms the principal transportation link for moving bulk petroleum products and dry cargoes to isolated northern communities and exploration and mining sites.

Goods originate primarily from Canada's three most northerly railheads, Fort McMurray, Alberta; Hay River, Northwest Territories, and Churchill, Manitoba. Northern Transportation's marine fleet consists of three coastal ships, 26 tugs and 167 dual purpose barges. In aggregate, they gross 90 000 tonnes of cargo capacity.

A wholly-owned subsidiary, Grimshaw Trucking and Distributing Ltd., provides a general merchandise trucking service from Edmonton and Calgary to many northern Alberta communities and three major centers in the Northwest Territories. Grimshaw Trucking operates 67 tractors and 166 trailer units.

Marine and trucking operations join at Fort McMurray and Hay River.

Yellowknife Transportation Company Limited, another wholly-owned subsidiary, is presently inactive.

Review 1978

During 1978 marine volume totalled 306 000 tonnes, an increase of 16 per cent from 1977. Of the increase, 58 per cent was generated by removal of seismic and drilling equipment from the Mackenzie Valley and the closure, by major oil companies, of staging sites in the Mackenzie Delta.

In the Athabasca area, volume increased by six per cent from previous year to a total of 62 000 tonnes. In the Keewatin District, the system handled an additional 2 000 tonnes for a season total of 24 000 tonnes.

The marine operating season in all sectors reflected normal weather conditions. However, low water levels on the Mackenzie River late in the season severely restricted the loading capacities of barges. Some equipment was prevented from reaching its home port by freeze-up. In spite of this, all community resupply and essentially all other freight was delivered.

The dry berthage facility at Churchill, Manitoba, was completed during the summer and will facilitate the future inspection and repair of marine equipment in the Keewatin area.

The company continued to experience losses on Great Bear Lake service during the year despite a government subsidy in 1978 to defray cash operating expenses. The subsidy provided time to consider resupply options and discussion with customers who would be affected by withdrawal of the service.

As a result of the favourable economy prevailing in Alberta, the company's wholly-owned trucking subsidiary handled increased volumes where traffic growth patterns continue to increase.

During the operating season the work force of the company and its subsidiaries reached 792 including 149 permanent residents of the Northwest Territories. Consistent with company policy, every effort was made to provide as much employment as possible to local residents.

Plans for 1979

The company expects competition for the logistic requirements of the exploration industry to remain intensive.

Following completion of the Great Bear Lake study the company was advised that government assistance will not be available beyond 1979. As a result, the company will ask the Canadian Transport Commission for permission to discontinue service on Great Bear Lake at the end of 1979 season.

No material change in the general level of activity is anticipated in 1979 with the result that employment will remain and capital expenditures minimized. ■

Northwest Telecommunications Inc.

NTI

Responsibilities

Canadian National Telecommunications provides public telephone, telegram, telex, data communications and mobile telephone service in a 1 450 000 km² area which includes Yukon, the western Northwest Territories and northern British Columbia.

CNT must provide these services on a businesslike and commercial basis and participate in providing non-economic services funded by the federal government as part of the Northern Communities Assistance Program.

A key 1978 development was the decision to set up CNT's northwest telephone operations as a separate profit centre within the CN corporation and establish its headquarters at Whitehorse, the largest community in the CNT franchise area. The first stage of this move took place in October when the general manager and half the headquarters staff moved to Whitehorse. The rest of the staff, making up a total of approximately 60, will move in 1979 and 1980.

Incorporation of the northwest telephone operations as a wholly-owned subsidiary of CN is proceeding. The new company, activated in the spring of 1979, will bear the name "Northwest Telecommunications Inc. - Télécommunications du Nord-Ouest, Inc.", as registered under the Canada Business Corporations Act.

The major advantage of this reorganization is that the resident managerial capacity provided will enable more efficient operation of the business as a profit centre, and improve response to customer needs and market conditions in northwest Canada.

Review 1978-79

Installation of a telephone and 24-channel radio system was completed in September, providing the mining community of Tungsten with local and long distance service. The exchange is linked to the Whitehorse toll centre with provision for operator assistance and direct dial access to the long distance network for the 136 new subscribers.

The Watson Lake to Cassiar radio system was extended with a 60-channel link to the northern B.C. community of Dease Lake. The system connects the existing Dease Lake local exchange to the Fort Nelson toll centre to provide the local residents with their first regular long distance connection to the nationwide network.

Cassiar Asbestos Corp. Ltd., closed down its Clinton Creek operation as a result of declining quality of recoverable asbestos fibre. The local exchange and connecting radio system is being removed for use elsewhere.

The DDD switching equipment was expanded at both Hay River and Fort Nelson toll centres. Eight additional exchanges were connected to the DDD network, providing 93.9 per cent of the CNT subscribers with convenience of direct dial service. This program will continue through 1979 and 1980.

Long distance circuitry serving the remote communities of Holman, Sachs Harbour and Snowdrift via satellite have been transferred to a thin route earth station leased from Telesat Canada and installed at Hay River. This eliminated the previous routing through Lake Cowichan on Vancouver Island. The final permanent installation will be completed early in 1979.

Other telephone exchange expansion projects were undertaken in 1978 at Cambridge Bay, Coppermine, Dawson City, Holman and Sachs Harbour.

Statistics at December 31, 1978

	<i>Telephone Exchanges</i>	<i>Main Stations</i>	<i>Total Telephones</i>
Northwest Territories	33	10 177	16 610
Yukon	18	8 624	13 535
British Columbia	11	2 227	3 655
	62	21 028	33 800

In conjunction with Alberta Government Telephones, the limited capacity 240-channel micro-wave system connecting the Northwest Territories with Alberta was replaced with a 1200-channel capacity system.

The Snare to Lady Franklin Point troposcatter system was upgraded with solid state equipment under the Northern Communities Assistance Program (NCAP). This system serves the communities of Coppermine, Cambridge Bay, Pelly Bay, Spence Bay, Gjoa Haven, Paulatuk and Port Radium (Echo Bay).

Plans for 1979-80

Local and long distance service will be provided to the northern British Columbia communities of Telegraph Creek and Iskut using the Cassiar to Dease Lake radio system to provide long distance circuitry to the Fort Nelson toll centre.

The older, limited capacity, electro-mechanical exchange at Porter Creek will be replaced with a 2000-line computer controlled digital switching system. Digital transmission is the most advanced medium of traffic switching available for commercial telephone use.

The stored program controlled SP-1 local and long distance switching centre at Whitehorse will be expanded by 2000 subscriber lines and 400 trunks.

Other telephone exchange extensions are planned at Watson Lake, Cassiar, Elsa, Faro, Fort Resolution and Dease Lake.

Work is progressing well on a major project to expand the Grande Prairie to Alaska micro-wave system from 960 to 1800-channel capacity between Grande Prairie and Whitehorse, and from 600 to 960-channels between Whitehorse and the Alaska border. Completion is scheduled for the third quarter of 1979.

A 60-channel radio system will be installed to serve the community of Mayo, permitting the transfer of long distance circuits from the open wire pole line route. The Parsons to Tuktoyaktuk radio system will be upgraded from 60 to 300-channels.

The fourth phase of the program to upgrade service to communities along the route at the Alaska Highway, using radio links to replace the open wire pole line, is under way. Completion of phase four will replace 322 km of pole line, leaving less than one quarter of the Alaska Highway pole line still in service. Additional sections will be replaced in a subsequent phase. ■

Post Office Department

PO



Some post offices are located in old log cabins like this one in Old Crow, YT.

Responsibilities

Canada Post provides mail service to all Canadians, whether located in the heavily-populated southern areas or in remote corners of the arctic.

Alert, the most northerly permanent settlement in the world, has a post office. Although, like many post offices in the Far North it is not manned by Canada Post personnel, the mail comes through the normal central point at Belleville, Ontario.

In many northern settlements, the post office is run by an individual, firm or organization which operates on behalf of the Post Office Department. In all, there are 78 post offices in the North.

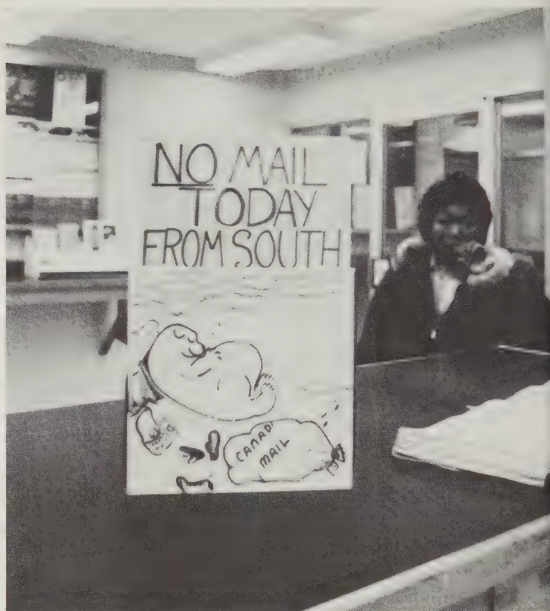
Two postal regions are responsible for the North's mail service. The Quebec Region is responsible for the east side of Hudson Bay, Ungava Bay area, eastern Arctic area, the District of Franklin, but not Sachs Harbour on Banks Island. The Western Region is responsible for the District of Keewatin, District of Mackenzie, the Yukon, and Sachs Harbour on Banks Island. One of the northern post offices, Sanikiluaq on Belcher Islands, is actually south of the 60th parallel. However, since it is on an island in Hudson's Bay it is considered to be part of the northern operation.

The number of post offices in the Arctic changes with the conditions. For example, Port Burwell Post Office closed when the community's population moved to another location. Similarly the post office at Snowdrift closed when Canada Post was unable to get someone as postmaster. Arrangements are now being made with the Settlement Council to have the Snowdrift Post Office reopened.

Canada Post has guidelines for the establishment of all post offices: satisfactory postal service cannot be provided through an existing office; customers of the proposed office are not on the direct line of travel of a rural route or suburban service or do not qualify to receive these services from an existing post office; residences are grouped together in a reasonably compact community; an individual, firm or organization is available as postmaster; and, satisfactory transportation arrangements can be made.

In addition there are minimum requirements concerning population and distance from other postal outlets. Some exceptions to the basic standards are made in dealing with isolated communities.

In the North mail is moved almost exclusively by air. One exception is the route between Inuvik and Arctic Red River where mail is carried by a scheduled commercial bus. Mail is normally carried by fixed-wing aircraft. However, during spring break-up and fall freeze-up, when neither float-equipped nor ski-equipped aircraft can operate, helicopters are used. Transporting the mail cost Canada Post \$157.3 million in 1977-78. Air transportation is particularly expensive. For example, mail carried by air to remote communities in the Yukon cost \$693 588 for fiscal year 1977-78. During that same period the cost for air transportation in the Northwest Territories was \$4 834 587.



A young customer at Frobisher Bay is disappointed. The reason mail won't arrive is, as usual, bad weather.

Some residents of northern settlements receive their mail by "courtesy bag service". This means mail is processed by Canada Post then placed in bags to be picked up by a mining company or oil exploration team for delivery to their personnel by their own company aircraft. This allows citizens living in remote areas to receive their mail more rapidly.

In some places, such as Arctic Bay, mail can only go by air when the ice is strong enough to support the aircraft weight. At other times the mail is delivered by boat or carried over land.

Canada Post encourages native people to apply for employment with the department. The majority of the postmasters in Quebec west's 17 northern offices are Inuit. On Baffin Island all of the post offices are operated by native people. The same pattern prevails west of Quebec in the northern areas under the jurisdiction of the Western Postal Region.■



Post Offices North of the 60th Parallel

- | | | |
|----------------------|----------------------------|------------------------|
| 1. Alert | 21. Cambridge Bay | 41. Lake Harbour |
| 2. Eureka | 22. Spence Bay | 42. Faro |
| 3. Grise Fiord | 23. Pangnirtung | 43. Ross River |
| 4. Mould Bay | 24. Gjoa Haven | 44. Destruction |
| 5. Resolute | 25. Coppermine | 45. Carmacks |
| 6. Nanisivik | 26. Repulse Bay | 46. Coral Harbour |
| 7. Pond Inlet | 27. Clinton Cr. | 47. Tungsten |
| 8. Arctic Bay | 28. Dawson | 48. Baker Lake |
| 9. Sachs Harbour | 29. Elsa | 49. Chesterfield Inlet |
| 10. Clyde | 30. Fort Good Hope | 50. Rae |
| 11. Broughton Island | 31. Mayo | 51. Yellowknife |
| 12. Tuktoyaktuk | 32. Frobisher Bay | 52. Rankin Inlet |
| 13. Holman | 33. Beaver Creek | 53. Whale Cove |
| 14. Igloodik | 34. Pelly Crossing | 54. Eskimo Point |
| 15. Hall Beach | 35. Norman Wells | 55. Ivuvik |
| 16. Old Crow | 36. Fort Norman | 56. Sugluk |
| 17. Aklavik | 37. Fort Franklin | 57. Deception Bay |
| 18. Inuvik | 38. Port Radium (Echo Bay) | 58. Maricourt |
| 19. Fort McPherson | 39. Wrigley | 59. Koartac |
| 20. Arctic Red River | 40. Cape Dorset | 60. Haines Junction |
| | | 61. Whitehorse |
| | | 62. Snowdrift |
| | | 63. Carcross |
| | | 64. Tagish |
| | | 65. Fort Simpson |
| | | 66. Teslin |
| | | 67. Swift River |
| | | 68. Watson Lake |
| | | 69. Fort Liard |
| | | 70. Fort Providence |
| | | 71. Fort Resolution |
| | | 72. Hay River |
| | | 73. Pine Point |
| | | 74. Fort Smith |
| | | 75. Povungnituk |
| | | 76. Bellin |
| | | 77. Sanikiluaq |
| | | 78. Pelly Bay |

Public Service Commission of Canada

PSC



Northern Careers Program training

Responsibilities

The Public Service Commission of Canada (PSC), an autonomous agency accountable to Parliament for the administration of the Public Service Employment Act (PSEA), ensures that the merit principle is upheld in staffing actions. The PSC accomplishes this by developing and administering open standards for selection of candidates for positions in the public service; the provision and operation of redress mechanisms for appointments challenged as violations of the merit principle; and audits to evaluate the manner in which staffing authority has been exercised.

The commission is also called upon to administer the Public Service Employment Act relating to the political activities of public servants, ensure equality of access to the public service for all Canadians, conduct and advise on training and development programs, and investigate discriminatory treatment in the public service.

Review 1978-79

Native Employment

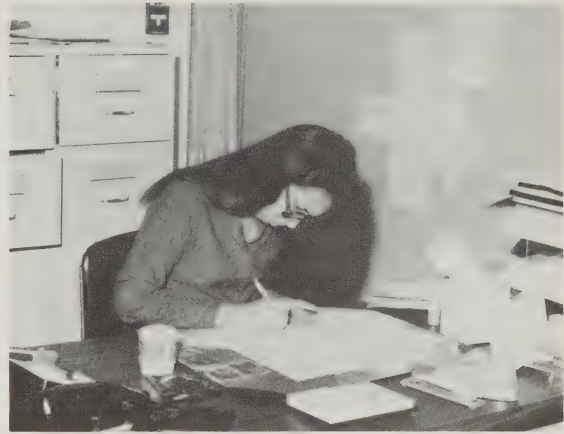
Through its Office of Native Employment, the PSC continued to promote employment prospects for native people in federal departments and agencies across Canada and in the North. The office paid particular attention to those programs for which native people are major clients. The office provided advice to native people on applying for jobs and preparing for interviews and explained the meaning and significance of regulations and legislation.

In late 1978, the PSC officially opened the Yukon district staffing office in Whitehorse. A native employment coordinator has been appointed to manage native employment operations in this office. A Northwest Territories district staffing office was officially opened in April, 1979. This office will also have a native employment coordinator.

Northern Careers Program

The Northern Careers Program, geared to increase the number of native people in the federal Public Service north of the 60th parallel, recruits and trains participants from the northern population. Participants begin as conditional employees of the commission and then undertake formal training assignments, or on-the-job training, for up to two years.

The program, sponsored by the Department of Indian Affairs and Northern Development, is operated by the PSC for all 14 federal departments operating in the Northwest and Yukon Territories. At December 31, 1978, 142 Inuit, Indians and Métis had been recruited. Of these, 38 have graduated by obtaining federal management jobs in the North; 24 have transferred to federal positions equal or equivalent to those held by the participant upon entry, 24 have withdrawn and 56 are current participants. Many of those who "withdraw" rather than "graduate" have secured new and better employment with other levels of government in the North.



Native employment

Plans for 1979-80

In late 1978 Treasury Board announced the federal government's policy to increase the number of Indian, Métis, Non-Status Indians and Inuit people employed in all occupational groups and levels within the public service. Under this policy, the commission helps departments identify and staff positions that should be filled by people with a sound knowledge of native communities and customs. PSC also helps departments design training programs and ensures that native people will be on selection boards for positions which are of importance to them.

Most of the native people now in the public service are concentrated in a few departments and at lower occupational levels. Future emphasis will be on increasing the number of native people in middle and senior management positions.

The forecasted 1979-80 expenditures associated with PSC activities in the North are: 91 person-years and \$2 264 000. ■

Department of Public Works

DPW



Alaska Highway

Responsibilities

Public Works Canada undertakes a wide range of construction and maintenance work in the North, usually at the request of other government departments. The department provides architectural, engineering and construction services, and assists in planning, site investigation, economic feasibility studies, design, as well as construction and management of buildings, public utilities, highways, harbours and wharves. It is also responsible for the acquisition and disposal of lands and properties, leasing of office and other space when Crown-owned space is not available and the upkeep of a number of federal buildings in the North.

Public Works has a continuing responsibility to develop and maintain navigable waterways in the North. It is also responsible for construction and upkeep of the northwest highway system, including the Alaska Highway and the Haines Road. The department provides an engineering service to the Department of Indian Affairs and Northern Development for the location, design and construction of roads under the northern roads program, which includes two major links in the North — the Dempster and Mackenzie Highways.

Accommodation, construction, marine and highways operations in the North are the responsibility of the department's regional directors in the Pacific and Western Regions.

Western Region

Responsibilities

Capital projects by Public Works Canada in the Northwest Territories can be divided into four major categories: accommodation, other government department accommodation, other government department transportation and marine.

Review 1978-79

PWC spent approximately \$2 800 000 in 1978-79 to complete an extensive northern housing program. Houses and other accommodation at Yellowknife, Norman Wells and Pine Point are almost completed.

Hay River post office renovations costing \$125 000 were completed as was the new post office at Norman Wells for \$145 000.

In support of the department's energy conservation measures, retrofit, insulation upgrading, and inspection of the insulation in existing buildings has been or will be carried out. Housing in Hay River and Pine Point has been brought up to standard at a cost of \$40 000 and \$3 000 respectively. One hundred PWC housing units in Yellowknife had complete insulation inspection and upgrading in 1978-79.

PWC conducted project management on behalf of other government departments.

A nursing station at Norman Wells was completed at a cost of \$690 000 for Health and Welfare Canada.

Progress was made on two projects for the Department of Indian Affairs and Northern Development. This included a \$750 000 extension to the assay laboratory and a \$300 000 addition to the core storage buildings in Yellowknife. The regional service centre in Yellowknife was completed at a cost of \$1 015 000.



Dempster Highway, Rough Graded, Mile 245, Yukon.

Royal Canadian Mounted Police buildings were completed at Fort Franklin, \$224 000; Fort Norman, \$223 000; Fort Smith, \$643 000; Snowdrift, \$215 000; Fort Rae, \$260 000. Renovations to the RCMP detachment building at Inuvik have been completed at a cost of \$104 000. Two houses at Coppermine and one at Fort Norman were completed and a start made on the detachment building at Hay River. The cost will be \$1 136 000.

Other buildings completed for the RCMP include garage-workshop combinations at Cambridge Bay, \$49 000; Eskimo Point, \$70 000; Fort Franklin, \$47 000 and Snowdrift, \$57 000. A total of \$260 000 was spent on five patrol cabins at Chesterfield Inlet, Coral Harbour, Gjoa Haven, Pelly Bay and Whale Cove.

Highways Program — NWT

Grading and traffic gravel on the Mackenzie Highway has been completed from Fort Simpson at Mile 295 to just south of Wrigley at Mile 425. There are no, however, provisions for crossing the Mackenzie River at Mile 347 or the Willowlake River at Mile 395. The remaining portion, from Mile 425 to Mile 931, has been designed but further construction deferred. Maintenance work carried out in 1978-79 was on the section from Fort Simpson to Campsall Bend, Mile 295 to Mile 343 at a total value of \$102 000.

The grading of the Dempster Highway was completed. However, traffic gravel on the Northwest Territories' portion is in place only on the section from the Peel River to the Reneging River, Mile 337 to Mile 402. Permanent ferry approaches and haulouts at the Peel and Arctic Red-Mackenzie Rivers have not been constructed. Work carried out in 1978-79 included: Grading from Mile 268 to 290 at a cost of \$10 146 000; from Mile 254 to 268 for \$5 702 000 and maintenance from Mile 254 to 290 for \$29 000. Two contracts totalling \$2 077 912 for gravel surfacing from Mile 298 to 337 were awarded.

Nine contracts were awarded and started in 1978-79 for the Liard Highway in the Northwest Territories. Hire North carried out grading Mile 21 to Mile 35.5, right-of-way clearing km 108 to km 207.9 and grading km 207 to km 254. Other contracts were: \$373 821 for grading contract, Mile 35.5 to Mile 38.5; \$84 180 for gravel stockpiling; \$273 050 for clearing and ditching Mile 35.5 to Mile 54; \$235 900 for clearing and ditching Mile 54 to Mile 67; \$3 894 080 for grading contract Mile 41.4 to Mile 63.8; \$626 900 for grading contract Mile 63.8 to Mile 67.

Marine Program

The Marine Section completed project management for an environmental study on behalf of the Arctic Transportation Directorate at a cost of \$12 000. This study supported an earlier engineering investigation of dredging on the Mackenzie River. A wharf costing \$200 000 was constructed for Transport Canada at Fort Providence, NWT.

Wharf improvements costing \$250 000 for Cambridge Bay, NWT, and \$139 000 for Yellowknife were awarded for completion in 1979-80.

More than \$40 000 was spent operating and maintaining wharves at Aklavik, Norman Wells, Hay River, Fort Simpson, Fort Norman, and Fort Good Hope. An area of the Camsell River was cleared of boulders by blasting for navigation.

Pre-engineering surveys were conducted at several sites for wharves, navigation, and ferry landings along 1440 km of the Mackenzie River. Monitoring continued at the emergency shore protection installed at Tuktoyaktuk for the NWT Government in 1976. Investigations and surveys were carried out and reports submitted for the Ministry of Transport at Fort Providence, NWT; for Parks Canada at Nahanni National Park, NWT; and for the Fisheries at Yellowknife and Hay River.

Plans for 1979-80

A sum of \$150 000 has been budgeted for energy conservation. Projects similar to those undertaken during 1979-80, such as retrofit, insulation upgrading and inspection of the insulation in existing buildings will be carried out.

Approval has been given to acquire sites for 50 new housing units at Frobisher Bay.

Expenditures of \$275 000 and \$285 000 respectively are planned for the completion of the extension to the assay laboratory and the core storage building in Yellowknife for the Department of Indian Affairs and Northern Development.

RCMP buildings for Baker Lake, Eskimo Point and Rankin Inlet will be shipped by barge from Churchill in July, 1979, for completion in 1979-80.

Married quarters for RCMP personnel at Baker Lake and Eskimo Point are being prefabricated for occupancy in 1979-80. The structure at Baker Lake is estimated at \$249 000 and at Eskimo Point, \$128 000. Married quarters at Rankin Inlet will also be completed at a cost of \$137 000. Slightly more than \$1 million will be spent on the detachment building at Hay River.

Opening of the Dempster Highway is planned for September, 1979. Design work will be completed on the Liard Highway in late summer of 1979.

Pacific Region

Review 1978-79

The five-year agreement between Public Works Canada and the Government of the Yukon Territory for the maintenance of the Alaska Highway West of km 1 008 and the Haines Road began April 1, 1978. The routine maintenance and a limited program of upgrading the highway to remove dangerous horizontal and vertical alignments and reduce maintenance problems was carried out under the agreement to a total cost for the year of \$8.18 million.

South of km 1 008 routine maintenance was carried out under separate contracts. This routine maintenance was supplemented by a gravel crushing and surfacing contract from km 161 to km 330 and 16 km of emulsified oil and chip treatment south of km 620. This program in B.C. totalled \$7.3 million.

The Departmental Capital Program continued at approximately the same level of expenditure as in the previous year to a total of \$16.12 million. Of this total \$4 million was spent for upgrading and paving the Alaska Highway in the Yukon; \$1.8 million for upgrading bridges in B.C. and the balance for upgrading and paving the Alaska Highway in B.C. Projects undertaken in the Yukon were: grade construction, km 1 025 to km 1 044; paving, km 1 391 to km 1 420; grade construction, km 1 492 to km 1 508.

The Canada - United States Joint Shawkaw Project started upon acceptance of the environmental impact statement. Two engineering camps were purchased with one set up at km 1 649.3 on the Alaska Highway in the Yukon and the other at km 78.8 on the Haines Road in B.C. Work concentrated on engineering surveys and designs, culminating in the award of two clearing and subgrading contracts valued at \$1 850 000 and \$2 257 000 respectively. This covered work on Haines Road, km 255.4 to km 2 304.4 and Alaska Highway, km 1 634.5 to km 1 664.5.

The Department of Indian Affairs and Northern Development was confined to the completion of its pre-engineering studies for gravel surfacing projects on the Dempster Highway and the Carcross-Skagway Highway and the completion of the grading contract on the Carcross-Skagway Highway from Mile 66 to Mile 85.

Plans for 1979-80

Highway maintenance of the Northwest Highway System will continue. The resurfacing contract in B.C. will be from km 869 to km 996 and includes the application of an emulsified asphalt and chip seal treatment.

The Public Works Capital program in the Yukon cost \$5.6 million and includes: paving km 1 492 to km 1 508; grade construction from km 1 025 to km 1 044 and km 1 005 to km 1 014.

The balance of the Public Works program will be in B.C. and includes reconstruction, paving and bridge contracts at a cost of \$7.6 million.

On the Shawkaw Project clearing, grubbing, and base course of the two projects started in 1978-79 will be completed. A start will be made on the grade construction on the Haines Road from km 80 to km 92 in B.C. and km 207 to km 230 in the Yukon and a new bridge over Stanley Creek in B.C. The total expenditure on these projects will approach \$15 million.

Engineering surveys and design will be undertaken for Indian Affairs and Northern Development on the permanent Frances River and Hyland River bridges on the Nahanni Range Road in the southeastern Yukon.



North span of Racing River Bridge. Note bank protection constructed after 1975 flood.

Property Administration

Review of 1978-79

The Property Administration Branch is involved in the operation and maintenance of Crown-owned and leased accommodation in the Yukon.

A drastic change in the method of funding operations and maintenance (O & M) costs of Northern Pool Housing was implemented. The total (O & M) costs are pro-rated over the units, with client departments reimbursing Public Works. The occupant's rental payment, which is based on CMHC appraisal "size suitability" is credited to the Consolidated Revenue Fund. Each department is responsible for utility and service costs attributable to the units assigned.

A branch of the Northern Pipeline Agency has been accommodated in the Yukon Centre Building, Whitehorse. Housing needs for the pipeline planning and construction period were identified.

Ceiling insulation in houses was raised to a standard of R-39, reducing fuel consumption and providing greater comfort.

Plans for 1979-80

Emphasis will be placed on continued repairs and preventative maintenance, especially pertaining to energy conservation.

Buildings

Review 1978-79

Public Works Canada completed the RCMP Air Detachment Hangar costing \$500 000 in October, 1978, Ross River Detachment for \$280 000 in February, 1979, and National Health and Welfare, Faro, Nursing Station Addition at \$250 000 in April, 1979.

Plans for 1979-80

Construction of the administration building in Kluane National Park at \$1.1 million to be completed in September 79; RCMP Beaver Creek detachment at \$300 000; and RCMP Carcross Detachment at \$250 000, to be completed in October, 1979; Revenue Canada Customs Housing at Pleasant Camp - 4 units to be completed October, 1979.

A chief, Building Construction, has been assigned to the Yukon and Northern B.C. to provide construction supervision and works design. ■

Department of Regional Economic Expansion

DREE

Responsibilities

DREE plans and coordinates programs to overcome regional economic disparities in Canada. In cooperation with the territorial governments, the Department of Indian Affairs and Northern Development (DIAND), and other federal agencies, DREE participates in the joint planning and implementation of regional socio-economic programs for those northern areas requiring special development assistance.

Northwest Territories

Review 1978-79

More than 140 applications for assistance have been received under the Special Rural Development Agreement (Special ARDA) between Canada and the Northwest Territories, signed in June, 1977. This program provides financial and other assistance, particularly to people of Indian and Inuit ancestry for development of employment opportunities and improvement of their socio-economic circumstances. Activities to date under Special ARDA are expected to result in 70 accepted offers, involving 76 jobs in commercial enterprises, and assistance to 1 120 people under the non-commercial aspects.

When the Special ARDA Agreement was signed the NWT was designated as an eligible region under the Regional Development Incentives Act (RDIA). This program provides incentive grants and loan guarantees to qualifying enterprises willing to expand, modernize or establish new manufacturing or processing facilities in the designated areas. RDIA has now helped projects expected to involve total investments of approximately \$573 000 and 33 jobs.

Plans for 1979-80

DREE is serving in an advisory capacity concerning consideration of a General Development Agreement for the Northwest Territories, under active consideration by the territorial government and DIAND. In addition, negotiation of an interim subsidiary agreement has been proceeding simultaneously. It is anticipated that both agreements will be signed during fiscal year 1979-80.

Yukon

Review 1978-79

A Special Rural Development Agreement (Special ARDA) between Canada and the Yukon Territory was signed June, 1978. At the same time, the Yukon was designated as an eligible region under the Regional Development Incentives Act (RDIA).

The Special ARDA Program provides financial support and other assistance, particularly to people of Indian ancestry, for development of employment opportunities and improvement of their socio-economic circumstances.

During the initial year of operation more than 50 applications for Special ARDA assistance were received.

The RDIA program provides incentive grants and loan guarantees to qualifying enterprises willing to expand, modernize or establish new manufacturing or processing facilities in designated areas. This program is relatively new in the Yukon yet the number of inquiries concerning RDIA assistance is increasing, indicating a growing awareness of benefits available for northern development.

Plans for 1979-80

Negotiations are continuing between the Yukon Territorial Government, DIAND, and DREE concerning a subsidiary agreement to augment the existing Canada-Yukon General Development Agreement. It is expected the proposed agreement will be signed during fiscal year 1979-80. ■

Department of National Revenue

DNR

Customs and Excise

Responsibilities

Customs controls the international movement of goods, persons and conveyances to ensure that the Canadian economy and society receive the protection to which they are entitled under the laws of Canada. In addition Customs collects duties and tax due on imports.

Review 1978-79

Yukon

The Port of Whitehorse, under the purview of the regional collector, Vancouver, continued to administer and enforce customs laws and regulations throughout the Yukon. The Territory, serviced by modern transportation for the import and export of goods and the international movement of passengers, accommodated this traffic through Customs outposts at Beaver Creek, Dawson, Little Gold (summer months only), Old Crow and Pleasant Camp. Customs formalities at Old Crow are performed by the RCMP. These outposts provided service at six locations approved as customs airports of entry and for the highway sufferance warehouses at Whitehorse and Dawson. Special arrangements were also made to accommodate river traffic leaving and re-entering Canada on the Yukon-Porcupine River route.

Northwest Territories

Edmonton maintains an outpost for enforcement purposes at Inuvik, NWT. Service at Inuvik is provided by a full-time customs employee. The RCMP continues to provide service at Frobisher Bay and at a number of settlements in the NWT under the guidance of customs headquarters in Ottawa. Service at these locations, however, may be restricted to the acceptance of inward passing and outward reports only.

During the year exploration activities, both of a commercial nature (the development of oil and mineral resources), and of a non-commercial nature (geographical, scientific and mountaineering expeditions), continued with increased intensity. Oil and mineral activities, with the attendant increased cargo deliveries into northern areas, have required closer surveillance by customs. This activity is continually monitored to assess reporting and accounting procedures, thus ensuring compliance with customs regulations. Officers from Edmonton, Vancouver and Ottawa went into the NWT several times to examine these aspects of the department's interests. On occasion they provided the customs function.

There was a significant increase in import and export cargo volume by vessel during 1978-79. The main shipping activity concerned oil, exploration and mining supplies, as well as petroleum products to various locations in the NWT, notably the mining community of Nanisivik. The cooperation of the RCMP and officials of other government departments designated as customs representatives ensured observance of customs requirements.

Locations for customs service in the North, other than the places previously discussed (which fall under the jurisdiction of the Customs Ports of Whitehorse and Edmonton), are listed under the headings of the government department performing customs duties.

Royal Canadian Mounted Police

Baker Lake	Nanisivik
Cambridge Bay	Pangnirtung
Clyde River	Pond Inlet
Coppermine	Resolute Bay
Eskimo Point	Sachs Harbour
Frobisher Bay	Spence Bay
Grise Fiord	Tuktoyaktuk
Lake Harbour	Yellowknife

Department of National Defence

Cape Dyer	Hall Beach
Cape Parry	

Transport Canada

Coral Harbour

Department of Environment

Eureka	Mould Bay
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Plans for 1979-80

Due to increased commercial activity in the NWT and the Arctic Archipelago, customs control will continue to be examined and monitored to determine staffing, surveillance and service requirements.■

Royal Canadian Mounted Police

RCMP



MPP Twin Otter, Yellowknife Sub-Division

"G" Division - Northwest Territories

The Royal Canadian Mounted Police, "G" Division polices the Northwest Territories. Under contract to the Territorial Government, "G" Division is both a federal and territorial police force with headquarters in Yellowknife. There are three subdivisions and 36 detachments as well as three "Air" detachments at Yellowknife, Inuvik and Frobisher Bay which supply support service to all police operations.

Review 1978-79

The Northwest Territories continues to have the highest per capita crime rate in Canada. Crime increased five per cent in 1978-79. Most of the serious crimes - homicide, sex offences, assaults - were related to alcohol abuse. However, plebiscites held in 17 communities have either totally prohibited or restricted use of alcohol. It is too early to determine the effects this will have on the crime rates. The total liquor sales in the Northwest Territories have dropped about three and a half per cent from the previous year.

The Regular Patrol Service System (RPS) to those remote settlements without permanent detachments is working well. There are presently 27 settlements served by RPS out of the 63 communities in the Northwest Territories. Fourteen of these 27 settlements have police patrol cabin facilities.

Efforts continued in 1978-79 to recruit native people for policing and public service support. Two new Inuit special constables were engaged and posted to Rankin Inlet and Cape Dorset. One female Inuit was recruited as a clerk-typist and posted to Rankin Inlet.

"G" Division continued its Summer Student Employment Activities Program during 1978-79. There were six students engaged as supernumerary special constables posted to Yellowknife, Hay River, Simpson, Inuvik, and Fort Smith.

Plans for 1979-80

Three double-wide trailers will replace the married quarters at Grise Fiord, Lake Harbour and Clyde River.

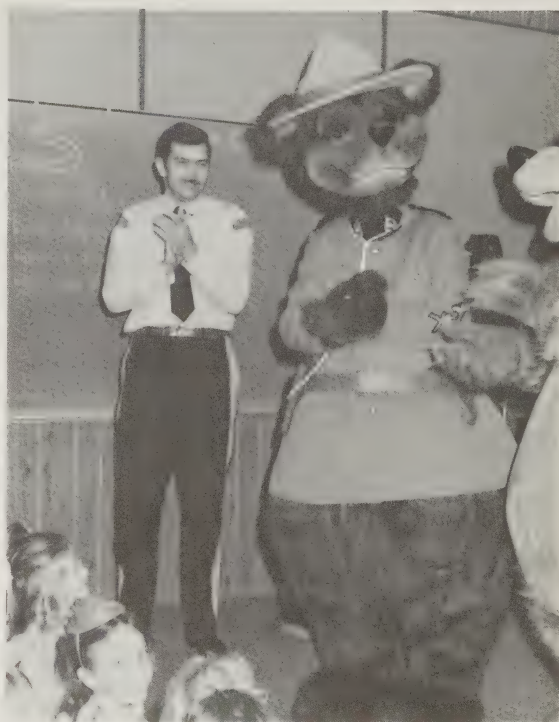
One patrol cabin will be placed at Repulse Bay to facilitate the regular patrol system. Replacement buildings are planned for Baker Lake, Hay River, Eskimo Point and Rankin Inlet.

"M" Division - Yukon Territory

Responsibilities

The RCMP provides all policing services in the Yukon. It seeks to preserve peace and maintain law and order by enforcing the Criminal Code, Federal Statutes and Territorial Ordinances.

Present Yukon strength of the force is 92 regular members, 10 special constables, eight civilian members and 13 public servants.



RCMP accompanied by Safety Bear talking to a classroom of children in the Yukon.

Review 1978-79

A new air detachment hangar complex was opened in December, 1978. A modular detachment was opened in Ross River and double-wide quarters were installed at Watson Lake, Carcross and Mayo.

All Yukon detachments are now equipped with Yukon Territorial Government Radio Telephones except Old Crow, which has a Zenith emergency telephone system connected through the Whitehorse Telecommunications Centre.

The Native Policing Program for the Yukon is still awaiting Treasury Board approval. A modified version of the program has been in place in the Yukon.

There are currently four communities, Beaver Creek, Carcross, Mayo and Teslin, staffed with Indian special constables. When Treasury Board approval is obtained three candidates, already identified, will take training. The long-range plan is to have an Indian special constable in every Yukon community and one on each of the revolving shifts of Whitehorse Detachment. This would give RCMP a total of 18 special native constables. This phasing will take several years.

The 12 detachments in the Yukon are located at Beaver Creek, Carcross, Carmacks, Dawson City, Faro, Haines Junction, Mayo, Old Crow, Ross River, Teslin, Watson Lake and Whitehorse. Statistics compiled for the Yukon in 1978 reveal a 12 per cent crime increase. There were 10 058 offences in 1977 and 11 259 in 1978.

Property offences increased significantly throughout the Yukon. In a recent series of break, enter and thefts in the Whitehorse area, a small number of youths were involved in a rash of 75 petty thefts from private dwellings. All the individuals were apprehended and most of the stolen property returned to the owners. The investigation found many people had not taken adequate measures to ensure their dwellings were properly secured. In order to reduce the incidence of property offences, the RCMP will be increasing its preventive policing program by conducting further business security checks and home security programs through the cooperation of the Yukon Territorial Government and local service clubs. Besides, patrols will be increased in urban areas.

Plans for 1979-80

Tenders have been let for new detachment buildings at Carcross and Beaver Creek. New married quarters will be established at Pelly Crossing, Ross River and Faro.

Additional manpower, buildings and equipment are planned to cope with the increase in activity expected once the Alaska Highway Pipeline is started late in 1980.

The RCMP will upgrade its facilities at Carcross to cope with the increase expected from the Carcross - Skagway Highway, completed in 1978.

Since the Dempster Highway will be open year-round, the RCMP will add one constable to Dawson City for patrol work. A truck and camper unit will be used as mobile detachment quarters.

Detachments at Beaver Creek and Haines Junction are being upgraded and additional quarters moved into place to cope with the increase of activity expected with the major highway reconstruction and paving project planned by the United States and Canadian Governments. ■



"M" Division Headquarters

Citizenship Sector

Responsibilities

The Citizenship Sector plans and administers programs to encourage full participation in Canadian society and enhancement of the quality of life. The programs seek to reinforce national unity and identity, encourage cultural awareness and appreciation of heritage diversity within a bilingual framework, and preserve and reinforce human rights and freedoms.

Review 1978-79

The program for the Northwest Territories and the Yukon is administered through the Department's Prairie and Pacific regional directorates. Under the Native Citizens Program, funding and support were provided to native associations, women's groups, friendship centres, social and cultural development projects, communications societies, including newspapers, radio and television programming, film and video productions for remote communities.

The Student Community Service Program helped organizations hire students for local projects. Project funding was provided to several status-of-women organizations and women's centres. In collaboration with the Northern Pipeline Agency, funding was provided for a study on the impact northern pipeline development would have on the lives of women in northern British Columbia and the Yukon.

The Official Language Minority Groups Program and the Multiculturalism Program provided assistance to a francophone group in Yellowknife and a number of multicultural community projects in the larger centres in the NWT. In the Yukon, the Hostel Program assisted the Yukon Hostel Association to operate hostels in four communities.

Plans for 1979-80

The department will continue to provide support to organizations and activities involved in northern development programs.

Language Programs Branch

Responsibilities

This program provides the official language majority in each province and territory with better opportunities to acquire a knowledge of the other official language. It also enables the official language minority in each province or territory to study in their mother tongue.

Review 1978-79

At the request of the two territorial governments, the branch renewed, for the fifth consecutive fiscal year, its assistance towards the official languages programs of each department of education. The maximum total allocation was \$200 000.

In the Northwest Territories, study fellowships were awarded to post-secondary students; full-time monitors were provided to assist French teachers; text books and other resources for French teaching were purchased; in-service training for French teachers was provided; career development bursaries were awarded to French teachers; translation of the instructor's guide for the French program was completed; resources for the future introduction of a French immersion course in the Yellowknife primary schools were developed.

In the Yukon, federal assistance to French-language programs helped provide the salary of a full-time coordinator of French courses; a full-time French monitor; bursaries for French teachers to further their training; expansion of in-service training programs and career development programs for teachers; bursaries for post-secondary students to enable them to take part in summer immersion courses; evaluation of the French program in urban areas; and development of non-credit French courses for adults.

Plans for 1979-80

The current Federal-Provincial Bilingualism in Education agreement expires April 1, 1979. However, action is under way to renew for five more years the program of financial assistance to the territories.

Bilingualism in Public Administration

Responsibilities

This program helps provincial, territorial and municipal administrations develop abilities to serve the public in both official languages. In previous years the program has shared the cost of translating statutes and regulations, second-language training programs, federal language training courses for provincial and municipal public servants. In 1978-79 the Yukon Territory claimed \$13 400 under this program.

Plans for 1979-80

Funding will not be available in 1979-80, but provincial, territorial and municipal administrations will have access to departmental consultation services and technical aid regarding terminology, translation and second-language training. ■

Department of Transport

DOT



Artist's Impression of a Polar 10 Class Icebreaker.

Arctic Transportation Directorate

Responsibilities

The Arctic Transportation Directorate develops, promotes and coordinates plans and programs for terminal facilities in the Yukon and Northwest Territories. This coordinating role not only involves planning and development within Transport Canada but includes consideration of the activities of federal government departments and agencies, the governments of the Yukon and Northwest Territories, industry, and the public.

Review 1978-79

A railway strategy has been developed by federal and Yukon Territorial Government officials.

The policy for the provision of air transportation facilities and services in the Yukon and Northwest Territories is still being implemented. The program of training residents of remote communities to operate and maintain airports continues. Training is given in airfield and vehicle maintenance, communications and meteorological services.

A special user charge policy was developed for the smaller, more remote airports. Future aircraft requirements for the Baffin (eastern arctic) area have been investigated and the impact on present facilities assessed.

The Intermodal Transfer Study into the economics of resupply to the eastern arctic by air and marine is complete. A similar study will begin soon for the Keewatin District. The impact of transportation on the cost of living will be examined in a study to be headed by the Department of Indian Affairs and Northern Development. Transport Canada will participate. All major airlines operating scheduled services in the Yukon and Northwest Territories have participated in a travel survey. The results will be published soon in a general report.

The directorate, in conjunction with the Northern Pipeline Agency, is monitoring the logistics planning of the Alaska Highway Gas Pipeline and the impacts this project will have on the national-regional transportation systems.

Canadian Surface Transportation Administration

Railway Transportation

Responsibilities

The Railway Transportation Directorate formulates policy proposals and ensures that the operation, planning and regulation of railways meet national needs and government policy. It also plans and implements railway programs consistent with such objectives, provides government with railway information, conducts liaison with industry and provincial governments and ensures that adequate resources are available for the continued improvement of the railway system.

Review 1978-79

The interdepartmental committee which defines railway development strategy in the Yukon generally completed its work and finished a study on ways of obtaining improved information about trucking as an alternative to railway extensions. The directorate expects that the railway development strategy in the Yukon will be completed during 1979-80.

The White Pass and Yukon Railway approach to the federal government for financial support was turned down. An interdepartmental task force of representatives from Indian Affairs and Northern Development, Transport Canada, the Canadian Transport Commission, Treasury Board, Finance, Energy, Mines and Resources, and the Yukon Territorial Government was established to examine the railway problem of loss of asbestos traffic. The task force study of the situation was examined by the Minister of Indian Affairs and Northern Development, in early 1979. He decided that federal support was not warranted and that if support for the railway was required it should come from the private sector.

Highway Transportation

Responsibilities

The Highway Branch negotiates and manages cost-shared highway programs and studies their interrelationship with other modes of transportation. The branch heads the Interdepartmental Highway Committee, which reviews proposed federal government highway investments south of 60°, as well as the Interdepartmental Committee on International Bridges, which coordinates all policy questions pertaining to bridges linking Canada and the U.S.

Review 1978-79

The branch participated in a number of interdepartmental and intradepartmental discussions on highway facilities in the North. It took part in intergovernmental discussions on the Canada - US agreement to reconstruct and pave the Canadian section of the Haines Road and of the Alaska Highway from Haines Junction to the Yukon - Alaska border. It also supported the ongoing Department of Public Works program of phased upgrading of the Alaska Highway.

The government's financial constraint program, initiated in 1978-79, led to the cancellation of some branch programs. This may be reflected in a proposed reorganization of the department's highway administration in 1979-80 but the branch's ongoing advisory services to ACND and DPW probably will not be affected.

Motor Carrier Branch

Responsibilities

The Motor Carrier Branch develops federal policies affecting the motor carrier industry and participates in strategic planning concerning movement of passengers or freight on Canada's highways.

Review 1978-79

The branch maintained close contact with provincial counterparts through membership in the Canadian Conference of Motor Transport Administrators. This organization works toward uniformity in Canadian motor carrier regulations. All provinces and territories are members.



CCGS Pierre Radisson in NW Passage

Water Transportation Assistance Directorate

Responsibilities

The Water Transportation Assistance Directorate subsidizes essential water transport services where full cost-recovery rates are impractical.

Review 1978-79

In 1978-79 the federal government subsidized the Northern Transportation Company Limited (NTCL) cargo service on Great Bear Lake. Although for many years NTCL has suffered a net loss with this service, it previously absorbed the loss. The amount of the subsidy required was \$300 000 for 1978-79. The federal government plans to again subsidize NTCL for the Great Bear Lake service in 1979-80. In the meantime, a review of the transportation problems in this area will be carried out to determine the best way to transport goods and, at the same time, reduce costs.

The Department of Transport subsidizes NTCL service from Churchill to ports in the Keewatin. In 1978-79 this subsidy amounted to \$210 000.

The subsidy for service to the Keewatin communities will continue in 1979-80. Administration of this service is being transferred to the Water Transportation Assistance Directorate from the Arctic Transportation Directorate.

Canadian Marine Transportation Administration

Responsibilities

The Canadian Marine Transportation Administration ensures the efficient and safe development and operation of the national marine transportation system. The administration comprises the Canadian Coast Guard, National Harbours Board, St. Lawrence Seaway Authority and the Atlantic, Laurentian, Great Lakes and Pacific Pilotage Authorities.

In the arctic, the administration provides facilities and services for commercial and resupply shipping.

Canadian Coast Guard

Responsibilities

The Canadian Coast Guard coordinates the delivery of cargo for the Canadian Government, USAAF and Canadian commercial interests. It provides ice and routing information and icebreaker support for all vessels. It carries out environmental research and surveys, installs, operates and maintains aids to marine navigation, carries out search and rescue operations and administers the Navigable Waters Protection and Arctic Waters Pollution Prevention Acts.

Review 1978-79

As in past years, the Canadian Coast Guard coordinated and conducted the annual resupply in the eastern arctic, assisting ships with delivery of fuel and other commodities and equipment to isolated bases, communities and defence radar sites. It also provided ice routing and icebreaker escort to commercial shipping, particularly in the Hudson Bay grain route to Churchill, Manitoba, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Rae Point and Eureka. In some instances, where ice conditions were severe and the cargo small, icebreakers themselves delivered the cargoes.

During the 1978 eastern arctic resupply operations, 12 939 tonnes of dry cargo were delivered by seven vessels while 29 128 tonnes of bulk petroleum products were delivered by four tankers to 35 settlements and sites. A fifth tanker was chartered to carry 7 227 tonnes of bunker fuel to Canadian Coast Guard icebreakers in the High Arctic. The Canadian Coast Guard deployed five heavy icebreakers, three medium icebreakers, one northern resupply vessel and one survey vessel to support these operations.

The light icebreaker Camsell and the new Pierre Radisson were seconded to western arctic shipping, primarily in operations of the Northern Transportation Company Limited resupply of communities and DEW Line sites. The Camsell also carried out her regular role with aids to navigation until she sustained heavy ice damage in the Queen Maud Gulf September 10.

The multiparameter survey of Hudson Bay, undertaken by CCGS Narwhal in 1975, continued. It is aimed at collecting bathymetry and geophysical data. The hydrographic data collected will be used to delineate better navigation routes, while the scientific data will be used in producing natural resource charts. Icebreakers also carried out hydrographic surveys in various regions of the arctic.

CCGS Pierre Radisson, the first of two new "R" Class vessels, left Victoria July 10 and sailed through the Northwest Passage. She provided icebreaker support to commercial shipping in the eastern arctic before continuing her voyage to Quebec, where she arrived October 28.

In September, the Canadian Coast Guard chartered CCGS John A. Macdonald to Dome Petroleum Co. Ltd. for one year to provide icebreaker assistance to the company's drilling fleet in the Beaufort Sea. From Resolute, the vessel proceeded through the Northwest Passage to her station off Tuktoyaktuk, enabling the company to extend drilling operations until early November. She wintered as a dead ship, along with the Dome fleet, at Summers Harbour off Cape Parry, NWT.

The NORDREG - ECAREG Vessel Traffic Management System and the Frobisher Bay Ice Office continued to monitor operations and track shipping movements, providing ice information and ice routing services and allocating icebreaker support.

During the season 109 vessels used the Arctic Canada Traffic Zone. Ten vessels sustained damage, four were defective, three were deficient in charts and publications, and one minor case of pollution occurred.

Arctic-related research and development continued to receive high priority. A full-time Nuclear Icebreaker Project Office was established and Treasury Board approved a \$6 million design study. Other research projects included the air cushion icebreaking bow attachment, aimed at enhancing icebreaker capability through the use of air cushion technology; the Coast Guard studies on communications systems in the North; the development of ice buoys, and icebreaker instrumentation, and research on air bubbler systems.

The Canadian Marine Transportation Administration administers certain public port facilities north of 60°, particularly along the Mackenzie River system, and in small coastal communities in the Amundsen Gulf to Ross Strait range in the western arctic. These facilities are in addition to those provided by the private sector.

Facilities in the western arctic are generally shallow draft, primarily suited to barge traffic originating on the Mackenzie River System. There were no major changes to these facilities in 1978 and, due to the general decline in commercial cargo movements along the Mackenzie System, no major changes are planned in 1979.

In the eastern arctic, public port facilities are limited to Nanisivik, Strathcona Sound, on Northwestern Baffin Island. Last year marked the first full season of operation. The facility consists of three large diameter steel sheet pile cells with concrete caps and gravel cargo-working area, all connected to shore by a gravel causeway. A shiploader and conveyor system was provided by Nanisivik Mines Ltd. for loading mineral products. The facility can be used by vessels of up to about 50 000 t deadweight. Cargo shipments inbound amount to some 10 000 t, which was mostly general cargo and petroleum products, and outbound of 141 000 t, mostly ore concentrates.

Canadian Air Transportation Administration

Responsibilities

The Canadian Air Transportation Administration (CATA) develops a safe and efficient national Civil Air Transportation System and operates specific elements of this system, including airports, air traffic control facilities and services, domestic and international airways - air routes. The administration plans northern air transportation, in coordination with the Arctic Transportation Directorate, and funds and implements approved projects.



CCGS St. Laurent on Arctic Probe

CATA has a headquarters organization responsible for national direction and formulation of policies, standards and regulations. It is complemented by six regional offices that look after the day-to-day operations of the civil air transportation system. Three of these regional offices, Quebec, Central and Western, have responsibilities in northern Canada.

The Arctic Air Transportation Facilities Policy gives specified criteria and standards for arctic airports, classified as category A, B or C. Arctic A airports are major airports owned and operated by Transport Canada, directly or under contract. They serve scheduled jet aircraft. Many arctic B and C airports are not operated by Transport Canada, but serve area and community needs.

Of the more than 60 airports in the program, about 53 are arctic B or C. These airports have runways of 1 500 m or 915 m and are used by piston or turboprop aircraft. Total implementation costs are estimated at over \$80 million.

Over \$6 million was spent on these airports in 1978-79, for a total expenditure to date of about \$25 million or approximately one-third of the estimated total expenditure. More than 30 airports are fully operational.

A Memorandum of Understanding concerning arctic B and C airports was ratified by the Territorial Governments, Environment Canada, DIAND and Transport Canada in October, 1978. Section 8 concerns Transport Canada's agreement to train personnel to operate and maintain arctic airports.

Civil Aeronautics

The Civil Aeronautics Directorate is responsible for regulatory and air navigation service activities.

Air navigation services includes designating airways – air routes; determining associated facilities and developing related standards; inspecting and calibrating navigational aids; inspecting runways and manoeuvring areas; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing air traffic control for Canada and the international airspace for which Canada has responsibility and funding the meteorological services required to support aeronautics.

Regulatory services includes developing and enforcing aeronautics legislation, standards and procedures; inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft; surveillance of aircraft manufacture and repair; and investigating aircraft accidents.

Aeronautical Licencing and Inspection

A Grumman G-II (CG-CFB), operating from Ottawa, inspects many navigation and landing aids north of 60°. The aircraft is equipped with inertial navigation and can inspect Very High Frequency Omnidirectional Ranges (VORs) during weather conditions below the Visual Flight Rules (VFR) minima.

Air Traffic Services (ATS) provides control services for flights operating under Instrument Flight Rules (IFR) in the arctic.

The high-level airspace in Canada has been divided into three general ATS areas: the Arctic Control Area, the Northern Control Area and the Southern Control Area. Control services were provided to all flights operating in these areas by using the Arctic Track System and the Northern Track System together with the domestic high-level airway structure. In the low-level airspace, control was provided along designated airways and within control area extensions. These extensions, and their nautical mile radii, were: Fort Smith, 50; Hay River, 50; Norman Wells, 50; Yellowknife, 50; Frobisher Bay, 40; Inuvik, 40; Whitehorse, 40; Simpson, 25; Teslin, 25; Watson Lake, 25.

Control Zones provide additional protection and improved service to operators at: Fort Simpson, 5 NM radius; Frobisher Bay, 5; Norman Wells, 5; Watson Lake, 5; Fort Smith, 10; Hay River, 10.

Aerodrome Traffic Zones provide additional protection at uncontrolled airports. These zones, of 5 NM radius, were located at: Baker Lake, Cambridge Bay, Coral Harbour, Eskimo Point, Eureka, Fort Resolution, Hall Beach, Grise Fiord, Nanisivik, Rankin Inlet, Resolute and Wrigley.

In addition, ATS provided information and supplementary services to aircraft operating north of 60°. ATS also operates discrete telephone circuit from the Edmonton Area Control Centre to Cambridge Bay, NWT, with switching arrangements there to the Reykjavik ACC in Iceland and to the Anchorage Air Route Traffic Control Centre in Alaska.

Aviation Safety Bureau

Federal government departments which send their employees to the arctic conduct regular survival training programs in case of forced landing or crash of an aircraft. The bureau's Regional Aviation Safety Officers participate and provide safety publications and audio visual presentations. Continued emphasis is on compliance by commercial operators with Air Navigation Order Series V, which includes a listing of survival equipment requirements.

The bureau maintains contact with the Canadian Armed Forces Search and Rescue Organization and responds to safety recommendations made by this group.

Airports and Construction Services Directorate

Responsibilities

The Airports and Construction Services Directorate provides, maintains and operates the National Airports System, and plans, designs, constructs and maintains all airport facilities (except equipment for non-visual aids to navigation air traffic services). The directorate plans and coordinates all activities related to airport operations, levels of service, services and facilities. This includes developing policies and guidelines for the operation and security of airports; developing policies and standards for the planning, design, construction and maintenance of airport facilities; providing financial and advisory assistance to community airports; and engineering and architectural support to off-airport CATA installations.

The directorate is also responsible for major construction and design of projects undertaken by regional administrators as well as for purchase of such items as runway sweepers, snow blowers and AES vehicles.

The development of training programs, policies and standards is carried out in conjunction with other government departments and agencies. The Airports and Construction Services Branches in the regional offices implement projects and look after day-to-day operations of the National Airports System.

Review 1978-79

The Civil Aviation inspection program covered most commercial arctic bases in 1978-79. Pilot examinations and flight tests were conducted as required. All licensed airports were inspected, as were a number of unlicensed sites to determine their acceptability for operations. Navigation aids were flight checked on a scheduled basis.

Quebec Region

Eight arctic B and C airports and one arctic A (Frobisher Bay) come under Quebec Region. At Cape Dorset and Pangnirtung, implementation is virtually complete.

Review 1978-79

Broughton Island

completion of building to house the non-direction beacon.

Clyde River

passenger-cargo shelter, airfield lighting kit, aircraft refuelling kit and electrical power line completed.

Frobisher Bay

Tower Co. (1961) Ltd. of Montreal took over the facility operation and maintenance under contract. Minor renovations were made to the terminal and lighting system.

Lake Harbour

a building for the non-direction beacon was completed.



Arctic Resupply Vessel Under Coast Guard Escort

Pond Inlet 1 219 m by 20 m runway is now operational. A passenger-cargo shelter, airfield lighting kit and aircraft refuelling kit were completed and turned over to the community for operation.

Sanikiluaq an airfield lighting kit was installed.

Plans for 1979-80

Broughton Island relocate apron and taxiway on village side of the runway; install aircraft refuelling kit, VHF air-ground communications equipment, and meteorological equipment; construct a passenger-cargo shelter; put in non-direction beacon.

Clyde River complete runway improvements and extension and construct maintenance garage.

Lake Harbour install non-direction beacon equipment and complete runway extension.

Central Region

Central Region has 14 arctic B and C and one arctic A airport (Resolute Bay). Airport runways and associated developments are essentially complete at Rankin Inlet, Eskimo Point and Chesterfield Inlet. Airports are under construction at Repulse Bay, Spence Bay, Igloolik, Nanisivik and Grise Fiord.

The Whale Cove runway development is scheduled to begin in 1979-80, with Hall Beach, Baker Lake, Pelly Bay and Gjoa Haven, programmed for completion by 1984-85.

The airports will generally have runways 915 m long. Exceptions are: Baker Lake, 1 280 m; Eskimo Point, 1 219 m; Grise Fiord, 610 m; Hall Beach, 1 524 m; Nanisivik, 1 951 m; and Rankin Inlet, 1 524 m.

Programming and installation of the associated facilities defined under the arctic Policy is continuing at all Central Region arctic B and C airports.

Between October, 1976, and December, 1978, six training courses were held for observers - communicators in the North. Of the 41 trainees, 33 graduated and 28 are still employed at various communities. All but three are native northerners. In the same period, three airport maintenance courses were held involving 28 people, 23 of whom are still employed in the area.

Review 1978-79

Baker Lake

VHF direction finder (DF) was established; taxiway "A" was widened; grading was started on the visual approach slope indicator system (VASIS) areas and alterations and renovations were made to the Transport Canada complex.

Chesterfield Inlet

the 915 m by 30 m runway, parking apron, taxiway, terminal development area, meteorological area and fuel pad were completed; airport lighting and VASIS installations begun.

Coral Harbour

a heated storage garage and installation of VHF-DF was begun; and rotating beacon purchased.

Eskimo Point

installation of medium intensity lighting was completed with runway end identification light systems REILS and VASIS at both ends of the runway; the NDB relocated.

Grise Fiord

the 610 m by 23 m runway, including taxiway and apron, was upgraded; the runway lighting and VASIS was commissioned; a radio was installed in the runway maintenance vehicle for better communications with Aeradio station.

Hall Beach

a maintenance garage building was purchased and stored for future erection and the NDB was replaced and relocated.

Igloolik

a passenger - cargo shelter was erected; construction equipment for the runway was shipped from Pond Inlet for the beginning of construction in 1979-80; an arctic "C" VHF communication package was provided and installation of meteorological instruments started.

Nanisivik

runway development continued; medium intensity lighting, VASIS and REILS continued and low intensity approach lighting was completed.

Rankin Inlet

installation of aviation fuel dispensing unit and storage tanks continued; apron floodlighting, REILS, VASIS and medium intensity lighting projects were completed.

Repulse Bay

runway, apron and taxiway, fuel pad, meteorological pad and building construction continued; temporary lighting package installed.

Resolute Bay

apron floodlighting installed.

Spence Bay

construction of a 915 m by 30 m runway, apron and taxiway, fuel pad, meteorological pad and building area continued; a medium intensity temporary lighting kit was installed.

Whale Cove

a medium intensity temporary lighting kit was installed and VASIS purchased for installation in 1980-81.

Plans for 1979-80

<i>Baker Lake</i>	relocate field electrical centre in the maintenance garage; expand the aircraft parking area and complete VHF/DF installation, widen and grade taxiway of VASIS areas.
<i>Chesterfield Inlet</i>	complete airport lighting and VASIS installations and extended power line from community to airport.
<i>Coral Harbour</i>	purchase materials for revisions to high intensity lighting, and install VASIS at both ends of the runway; complete heated storage garage and VHF/DF installation and replace with more modern equipment.
<i>Grise Fiord</i>	complete runway construction.
<i>Gjoa Haven</i>	ship equipment from Spence Bay for construction of a 915 m by 30 m runway in 1980-81.
<i>Hall Beach</i>	erect maintenance garage.
<i>Igloodik</i>	begin construction of a 915 m by 30 m runway; install meteorological instruments.
<i>Nanisivik</i>	complete runway and install medium intensity lighting, VASIS and REILS.
<i>Rankin Inlet</i>	complete installation of aviation fuel dispensing unit and establish rotating beacon and VOR/DME, VHF/DF, flight service station.
<i>Repulse Bay</i>	complete runway; purchase passenger - cargo shelter for erection 1980-81.
<i>Spence Bay</i>	complete the runway; purchase passenger - cargo shelter for erection 1980-81.
<i>Whale Cove</i>	start upgrading runway, taxiway, apron, access road.

Western Region

Western Region has 31 arctic B and C and 9 arctic A airports. The region staffs arctic airports with local observers - communicators. Seven airports are staffed and operational, including Faro and Old Crow in the Yukon, and Aklavik, Holman, Wrigley, Fort Resolution and Fort McPherson in the Northwest Territories. This represents 25 per cent of the total Air Facilities Program planned for arctic communities in Western Region.

In the past year, Air Traffic Service emphasized the integration of IFR and VFR traffic within the terminal airspace at such locations as Yellowknife and Inuvik. Increases in light aircraft movements at locations with substantial IFR traffic necessitated giving control towers increased responsibility for approving Special VFR flights. The new procedures should minimize delays during bad weather.

Plans for establishing an Airworthiness Inspection District Office in Yellowknife are now final. Two Technical Inspectors, to be based in Yellowknife, will work throughout the arctic. The office will be established in July, 1979.

The first draft of the Northwest Staging Route Area Aviation Master Plan, a long-range plan for aviation facilities and services in the corridor extending from northwestern Alberta through northeastern B.C. and the Yukon, was completed. The draft is being revised and updated and should be completed early in 1979-80.

Review 1978-79

<i>Aklavik</i>	passenger - cargo shelter completed; communications equipment and temporary runway lighting installed.
<i>Beaver Creek</i>	runway, taxiway and apron improvements completed.
<i>Cambridge Bay</i>	solid-state transmitter installed for "YCB" NDB.
<i>Coppermine</i>	modifications to heating system in passenger - cargo shelter completed.
<i>Faro</i>	gravel overlay to runway, taxiway and apron completed; hazard beacon installations started.
<i>Fort Liard</i>	brush clearing for runway construction continued.
<i>Fort McPherson</i>	facility now operational
<i>Fort Simpson</i>	VOR extended in preparation for conversion to Doppler in 1980-81.
<i>Fort Smith</i>	construction work for installation in 1981-82 of DVOR facility partially completed.
<i>Hay River</i>	asphalt concrete levelling applied to runway 12-30.
<i>Holman</i>	1 290 m by 30 m gravel-surface runway, airfield lighting and IPU installations completed; aviation fuel dispensing unit and VHF communications equipment installed; passenger - cargo shelter completed and operational.
<i>Inuvik</i>	solid-state transmitter installed for "YEV" NDB; performance problems on the uncommissioned DVOR investigated for relocation in 1982-83.
<i>Mayo</i>	gravel crushed and stockpiled for future runway surfacing.
<i>Old Crow</i>	passenger - cargo shelter completed and operational; VHF communications equipment installed.
<i>Ross River</i>	boundary fence completed.
<i>Sachs Harbour</i>	access road and building area construction started; materials for new passenger - cargo shelter arrived; power line constructed to aviation development area.
<i>Tuktoyaktuk</i>	runway improvements continued.
<i>Whitehorse</i>	repairs to taxiway "E" completed; replacement of water and sewer lines and repairs to apron started.
<i>Yellowknife</i>	materials purchased to replace existing water distribution system; solid-state transmitter installed for the "YZF" NDB.

Plans for 1979-80

<i>Aklavik</i>	complete fill construction and gravel surfacing; install permanent runway lighting and new NDB.	<i>Watson Lake</i>	begin site construction work for instrument landing system (ILS) and runway visual range (RVR) facility.
<i>Beaver Creek</i>	complete new access road, building area and NDB site and start passenger - cargo shelter.	<i>Whitehorse</i>	complete replacement of water and sewer lines and repairs to apron.
<i>Burwash</i>	install taxiway and apron lighting.	<i>Wrigley</i>	do flight checks on VOR/DME to determine if it is satisfactory for commissioning. (If not, additional construction work will be required to convert this facility to DVOR).
<i>Coppermine</i>	supply dry chemical fire-fighting equipment.	<i>Yellowknife</i>	replace existing water distribution system.■
<i>Faro</i>	install VASIS.		
<i>Fort Franklin</i>	start airport development; purchase materials for passenger - cargo shelter.		
<i>Fort Good Hope</i>	decommission flight service station; install arctic "C" communications package.		
<i>Fort Liard</i>	start runway development.		
<i>Fort Norman</i>	start airport development, including improvements to access road; complete clearing to improve zoning.		
<i>Fort Resolution</i>	modify runway lighting layout.		
<i>Fort Smith</i>	pave airport access road, carpark and taxiway between aprons 1 and 2.		
<i>Haines Junction</i>	begin airport development and passenger - cargo shelter; install VHF communications equipment and NDB.		
<i>Hay River</i>	do flight checks on VOR/DME to determine if it is satisfactory for commissioning. (If not, conversion of this facility to DVOR will be scheduled for 1980-81).		
<i>Holman</i>	complete improvements to passenger - cargo shelter; supply dry chemical fire-fighting equipment.		
<i>Lake Harbour</i>	complete 585 m runway extension; install an NDB.		
<i>Mayo</i>	convert operations building to combined flight service station - passenger - cargo shelter; supply dry chemical fire-fighting equipment.		
<i>Old Crow</i>	complete passenger - cargo shelter; install permanent meteorological facilities rotating beacon and lighted windsock; supply dry chemical fire-fighting equipment.		
<i>Ross River</i>	construct new apron, taxiway, access road and building area; begin new passenger - cargo shelter; install NDB and VHF communications equipment.		
<i>Sachs Harbour</i>	complete passenger - cargo shelter and airport improvements; install VHF communications equipment; supply dry chemical fire-fighting equipment.		
<i>Teslin</i>	modify runway lighting layout.		
<i>Tuktoyaktuk</i>	complete runway improvements; install runway lights and VASIS; supply dry chemical fire-fighting equipment.		

Responsibilities

Veterans Services

Veterans Services provides health care, financial assistance and counselling to eligible veterans and their dependants. In addition, benefits are provided for certain civilians who served in close support of the armed forces during wartime. The program has no district offices in the Yukon or Northwest Territories because of the small number of actual and potential clients, but counsellors make regular visits to the major urban centres. As required, visits are also made to outlying areas to ensure a high level of service to all clients.

Canadian Pension Commission

The Canadian Pension Commission ensures that benefits available under the Veterans Pension Legislation are extended to all eligible veterans and their dependants. To achieve this in the North, Commission staff from Vancouver and Edmonton district offices provide clientele living in the Yukon and the NWT with services identical to those available elsewhere in Canada. These services include counselling, assistance with applications for benefits available under the pension legislation and medical examinations for assessment purposes.

Bureau of Pensions Advocates

Pension applicants in the Yukon and the District of MacKenzie, NWT, obtain assistance from the Bureau of Pensions Advocates through the District Office in Edmonton. Veterans who reside in other parts of the Northwest Territories are served through the District Office in Winnipeg. However, applicants who reside in the Yukon or the Northwest Territories may deal with any other District Office.

If a claim is heard by an Entitlement Board the applicant will receive travel expenses to the District Office where the hearing takes place.

Review 1978-79

At March 31, 1979, pensions awarded for disability or death attributable to service were being paid to 49 recipients in the Yukon and Northwest Territories. There were approximately 60 recipients of War Veterans Allowances or Civilian War Allowances in these regions. ■

Government of the Northwest Territories

GNWT



Baffin Regional Council meeting at Pond Inlet September, 1978

Responsibilities

The NWT Government exercises jurisdiction within the Northwest Territories, exclusive of control over natural resources (except game, which is a territorial resource).

Council of the Northwest Territories

Council sessions were held in Yellowknife in January-February, May and October. Of major significance was the acceptance by the federal government of the council's long-standing demand for improved representation based on an increased number of council members. The House of Commons amended the NWT Act to allow for a minimum of 15 council members and a maximum of 25 members.

64th Session

The first council session of 1978 convened January 20 and prorogued on February 13.

In his opening address to the council, Commissioner Stuart Hodgson said that one of the major gains of the past years was the appointment of the Prime Minister's special representative on constitutional development in the Northwest Territories, the Honourable C.M. Drury, because his recommendations and conclusions would affect all northerners and change the course of northern history.

The Minister of Indian Affairs and Northern Development addressed the council opening day. He dealt with the factors which could influence formation of an economic development policy in the Northwest Territories, with the dual objectives of setting criteria and establishing the role of government in northern development.

The Minister called for an early resolution of native land claims to ensure the full and effective participation of native people in the development of the North. He said it was essential that there be a balance of renewable and non-renewable resource development and a strengthening of privately-operated business in the North. He announced that work would begin immediately on construction of a \$40 million Liard Highway, linking the Mackenzie Highway system with the Alaska Highway at Fort Nelson in northern British Columbia.

The Minister announced plans for an economic prospects conference that would include representatives from each level of government, the private sector, native associations and other appropriate organizations.

After scrutiny of the policies and programs of the individual departments for 1978-79, the sum of \$268 725 000 was voted for main estimates. Supplementary estimates for 1977-78, providing \$13 884 300, were also approved.

The commissioner was empowered to borrow funds from the Government of Canada to make loans to municipalities and individuals in fiscal 1978-79.

The Northwest Territories Housing Corporation Loan Ordinance was passed to make necessary funds available to carry out housing programs under the National Housing Act.

A Financial Agreement Ordinance was passed to provide payment of operating and capital grants to the Northwest Territories by the Government of Canada.

Enactment of the Collection Agreement (Income Tax) Questions Ordinance allows commissioner to refer to the court questions respecting the Collection Agreement provided for under the Income Tax Ordinance.

The Nursing Profession Ordinance was amended to provide for temporary certificates of exemption from registration to enable persons to work as nurses in the months preceding their formal qualification and to change the effective date of annual registration.

Minor amendments to the Corrections Ordinance were enacted so it will conform to the Prisons and Reformatories Act of Canada, amended by Parliament in August, 1977.

The Summary Conviction Procedures Ordinance, enacted by council, permits laying informations and issuing summons for certain offences through tickets issued by Peace Officers. Persons accused of these can pay a specified amount and avoid court appearances.

By amending the Vehicles Ordinance, the council provided for automatic suspensions or driving prohibitions for persons convicted of driving offenses under the Criminal Code, established additional driving licenses and different driving examinations for each class of license and enabled municipal councils to make bylaws on traffic matters.

The Retirement Plan Beneficiaries Ordinance allows contributors to designate beneficiaries.

The appointment of a second Judge of the Supreme Court of the Northwest Territories was made possible by the passage of an amendment to the Judicature Ordinance.

A Flood Damage Reduction Agreement Ordinance, to reduce potential flood damage, was passed to enable the commissioner to enter into agreements with the Federal Government.

The council adopted a recommendation of the administration dealing with the Petroleum Products Tax Ordinance. Under it, the Northwest Territories would follow the industry-accepted provincial practice of adopting a consumption-based diesel fuel tax system.

By unanimous vote a formal motion requesting the commissioner to appoint T.H. Butters to the Executive Committee of the Government of the Northwest Territories was passed. Mr. Butters replaced Dave Nickerson, who had resigned.

65th Session

The spring session lasted for nine days and prorogued May 18, 1978.

In his opening address the commissioner reviewed the Economic Prospects Conference held in Hay River. He noted that the principle theme that emerged from the three-day discussion was that developing the North required all northerners to work together collectively.

The commissioner said there were some major proposals forthcoming. The mining industry is seeking to develop new mines and bring them into production. Three proposals were being developed to bring proven resources of oil and gas in the arctic islands and the Beaufort Sea to market.

He announced that the administration would develop community complexes that would combine services and programs. Some would be owned and operated by the government, and others would be funded and sponsored through different arrangements with the communities. In several communities plans were under way to have facilities designed, built, owned, managed and operated by the community and available for lease or rent to government or industry.

Supplementary estimates were passed for \$2 409 100.

The Municipal Ordinance was amended to change the title of the chief executives of villages and hamlets from "Chairman" to "Mayor". The amendments were also designed to allow for election to fill vacancies occurring during the first year of a councillor's term and to enable the commissioner to fix the date of first elections.

An Electoral Districts Boundaries Commission Ordinance, to provide for an Electoral Boundaries Commission to recommend the division of the territories into electoral districts was adopted. The recommendations would be in a report for consideration by the Legislature.

The Petroleum Products Tax Ordinance was amended to establish a consumption-based tax on products imported into the territories. The exemption limits were reduced so that trucks entering from Alberta would be taxed on products consumed here.

An Ordinance respecting ophthalmic technicians was enacted to enable persons who had completed adequate training programs to practice as ophthalmic technicians.

The Territorial Hospital Insurance Services Ordinance was amended, preventing potential conflict of interest situations by prohibiting certain categories of persons from serving as members of boards of management or other bodies managing hospitals and health centres.

The Public Service Ordinance was amended to exclude rental and housing subsidies, provided by the government from collective bargaining.

An Ordinance respecting engineers, geologists and geophysicists was passed to establish an Association of Professional Engineers, Geologists and Geophysicists for the NWT. It provides for the regulation of members, licensees and permit holders of the association and regulates the practices of engineers, geologists and geophysicists.

The Presumption of Death Ordinance was amended to provide for more flexible procedures and to give protection to personal representatives acting on such orders.

The council also adopted an ordinance to amend certain ordinances and thereby remove certain discriminations on the basis of sex. It also provides for a chief coroner.

An Ordinance respecting the Territorial Court and its judges was enacted to make the Magistrates Court the Territorial Court, and the magistrates, the Territorial Judges. It authorized a chief judge and establishes a Judicial Council to oversee appointments, complaints against and removal of Territorial Judges.

In order to provide senior citizens with relief from property taxes, the council enacted the Senior Citizen's Land Tax Relief Ordinance. The government was authorized to pay certain benefits to senior citizens in the NWT through adoption of the Senior Citizen's Benefits Ordinance.

A Public Utilities Income Tax Rebates Ordinance was passed to enable the Government of the Northwest Territories to rebate to designated utility companies income on benefits to be passed on to consumers.

An amendment to the Taxation Ordinance was adopted to correct inconsistencies in the ordinance, extend the deadlines for demand of real property taxes and provide for discounts for early payment and interest on arrears.

An increase in the tax on cigarettes was approved.

An Ordinance to amend the Child Welfare Ordinance defines the manner and time in which matters must be brought before the Court. It reduces to six months the period of care and custody in adoption cases.

A major policy paper regarding legal aid in the Northwest Territories was considered by council. After considerable discussion it was agreed that the recommendations be accepted and that a Legal Aid Ordinance be introduced at the next session.

66th Session

The third session of the year convened in Yellowknife October 16, 1978, and prorogation came October 27.

Commissioner Hodgson said that the Northwest Territories had been asked to reduce expenditures for the current fiscal year by about \$2 million, to be followed by a reduction of \$4 million in the following year. To achieve this he said it would be necessary to fully use available human energy and work closer together. The commissioner said that every department would be reviewed and changes would be made in programs and recommendations ready for consideration at the next session.

The new Wildlife Ordinance was back on the order paper. Much discussion of the bill reflected the importance attached to this legislation by the northern people and bore out the necessity for the unprecedented amount of public consultation that had gone into the final draft. The new ordinance finally passed, however, replacing the 18-year-old Game Ordinance, adopted in 1960.

Council adopted an Ordinance Respecting the Franchise of Electors and the Election of Members to the Council of the Northwest Territories. This ordinance enables the Chief Electoral Officer of Canada to conduct territorial elections under a Territorial Elections Ordinance instead of the Canada Elections Act. The Canada Elections Act was modified where necessary to meet northern needs and conditions.

After consideration of the report submitted by the Electoral Districts Boundaries Commission, the Council Ordinance was amended to increase the number of electoral districts for the Council of the Northwest Territories. The territories will be divided into 22 electoral districts.

The Marriage Ordinance was amended to ensure that certain marriage ceremonies be legally valid.

The Disabled Persons' Allowance and the Old Age Assistance and Blind Persons' Allowance Ordinances were repealed as all three programs had been replaced some years ago.

Certain changes to the Income Tax Ordinance, required by the Federal Government, were adopted by the council and reflect changes in the Federal Income Tax Act.

The Dental Profession Ordinance was amended to enable persons to practice in the Northwest Territories who graduated in dental hygiene courses at suitable colleges or universities outside Canada and the USA and who are eligible to hold certificates of qualifications as dental hygienists in other provinces.

Similarly, the Medical Profession Ordinance was amended to allow persons not registered as medical practitioners in other provinces, but who were eligible for registration, to be registered in the medical register of the Northwest Territories.

The Workers' Compensation Ordinance was amended to increase the year's maximum assessable remuneration from \$14 500 to \$16 800.

The administration submitted an amendment to the Financial Agreement Ordinances, passed in February, 1978, to reduce the operating and capital grants for the 1978-79 fiscal year. This was approved by council.

Funding to meet additional operational expenses for the Government of the Northwest Territories during the fiscal year ending March 31, 1979, was approved by passage of the Supplementary Appropriations Ordinance which provided for \$12 799 700.

A full sitting day was devoted to discussion with the special representative of the Prime Minister on constitutional development in the Northwest Territories, the Honourable C.M. Drury. His report on his consultations, findings and recommendations was exhaustively discussed.

On the last sitting day, Dr. John Naysmith, Special Claims Representative for the Yukon and the western arctic, gave council a detailed outline of the proposed agreement with the people of the western arctic - the Inuvialut. Dr. Naysmith is responsible for the negotiations between the Committee for Original People's Entitlement and the Federal Government.

Science Advisory Board

The Northwest Territories Science Advisory Board was established to provide advice and support to council in the fields of science, engineering and technology. The 10-member board is composed of both northerners and southerners knowledgeable in scientific and technological developments in the North.

Five board meetings were held in 1978, including joint sessions with the Saskatchewan Science Council and the science and technology subcommittee of the Advisory Committee on Northern Development.

During the year, the board commissioned studies on renewable resource development in the North, on human demography and northern nutrition. Eight high school students were with scientific parties conducting northern research in archaeology, biology and geology.

Clerk of the Council

The Clerk of the Council provides professional advice on procedural matters to the Speaker, to the members and to the executive. All administrative and support services to the council and standing and special committees are provided by the clerk's office.

A simultaneous translation service and translation of documents into Eastern Arctic Eskimo are provided for council sessions in cooperation with the Department of Information.

The Clerk of the Council's office maintains a close liaison with the Chief Electoral Officer of Canada. Much time of the Clerk's office was devoted during the past year, in conjunction with the Department of Public Services, to the preparation and drafting of a new Territorial elections Ordinance.



Inuktitut instruction in the classroom, Pond Inlet

Department of Education

During 1978 the major development in education was the establishment of community education committees and public involvement in planning a number of projects.

The first education society under the Education Ordinance was established in Eskimo Point April 1, 1978. Plans were begun to develop regional advisory committees in Inuvik and Frobisher Bay.

With the completion of the Keewatin education centre each region will have its own regional centre. For the 1980's these centres could develop into a college system, incorporating grades 11-12 together with college, or transfer programs.

During the next decade long-range planning will be done to establish a community-based NWT junior high diploma program at the grade 10 level. This would mean that a student could achieve in his community the level of education required for job entry, for various forms of vocational training, or for entry in regional education centres.

Schools

Every settlement in the NWT has an elementary school. In addition high school programs are provided in Yellowknife, Fort Smith, Hay River, Inuvik, Pine Point and Frobisher Bay. A total of 70 regular schools were in operation during 1978. In 39 of these schools a junior high school program was provided. Enrolment in September, 1978, was 12 766.

Adult Education Program

Most communities provide adult education programs. There is a total of 29 adult education centres staffed by 34 adult educators and trainees. At the regional level there is a total of 16 staff supervising general adult and home management programs. A major responsibility during 1978 was development of local education authorities and the provision of training, information, and direction to community education committee members.

At the community level programs for adults are mostly for academic upgrading or general interest purposes. Since there is no institution for higher learning in the NWT, the territorial government provides grants and bursaries to students who go to college or university.

Student Travel and Exchange

A travel and exchange program is encouraged by the Department of Education. It provides support, including financial, to small groups wishing to travel within the NWT, to other parts of Canada or the world.

As a result, 48 students from the Sir John Franklin High School music department visited Vancouver Island in February and gave a concert at both junior and senior high schools. Twelve students from grades 8 and 9, along with two teachers and a member of the community education committee at Pond Inlet, visited Qaanaq, Greenland, in March.

Twenty-one students and two teachers (three students from each of the seven high schools) went to Saskatoon in April for the "Interchange on Canadian Studies". The theme was "Options Canada" and over 400 high school students discussed and debated Canada's future.

Education Programs and Evaluation

In 1978 the Education Programs and Evaluation Division published a handbook on the philosophical basis and rationale for all education programs. This was an updating and reorganization of previous handbooks published in 1972 and 1973.

A program on civic education for grades 4-10 was introduced for the 1978-79 year. In addition, a start was made on the development of a civic education program for adults.

A list of topics and activities for health education was made available to schools and a safety manual was provided.

Assistance was given to the Gordon Robertson Educational Centre for the preparation of programs in settlement maintenance and clerical-secretarial courses. The division also reviewed vocational-industrial courses offered in Fort Smith, Hay River and Sir John Franklin School in Yellowknife.

The philosophy and direction of kindergarten programs in the NWT was defined and published in a guidebook.

A major 1978 accomplishment was the curriculum development work completed for school core programs. This included detailed course outlines for primary and intermediate grades in language development, science, and social studies, supported by resource books and teaching ideas. A new publication "Applied Math" was placed in schools.

Units on environmental studies and migratory birds were produced and pilot tested in 1978. Guidebooks were prepared in physical education for primary and intermediate grades. These were supported by a resource book, tapes, and kits for teachers. Multiple sets of posters, depicting wildlife in the North, were supplied to schools and adult education centres.

In continuing and vocational education, development work was done on academic upgrading and life skills. Resource guides were developed for health, housing, and consumer education. Programs were developed for pre-employment welding and carpentry. Assistance was provided for the development of marine training programs. An evaluation of the heavy equipment operator program was conducted.

A diploma training program for classroom assistants was completed and provided to the regions. The adult educator training and the home management educator training programs were also completed.

Linguistic Programs

In 1978 a number of publications were produced, an analysis of the language situation in the schools was done, and native language instruction in the schools was fostered through seminars and workshops.

The third meeting of the Athapaskan language steering committee, which meets twice yearly, was held in Rae-Edzo in January. As a result a native language component will be added to the teacher education program by September, 1979; native people will be involved in linguistic research and contract work; and two 3-year training positions for native trainees will be established. The trainees will take over the positions of Athapaskan and Inuktitut curriculum specialists.

Work is being done on the Loucheux, Slavey, Dogrib and Chipewyan languages. Basic research is continuing in the languages. A set of readers has been produced for use in the schools and a teachers' workshop, which will be repeated regularly, was held.

A standard dual orthography for Inuktitut (roman and syllabics) has been established by the Inuit Cultural Institute. There is a pattern of teaching Inuktitut in the schools and the number of native teachers is growing. Systematic guides for Inuktitut language arts have been produced for kindergarten, grade one, two and three.

Vocational and Higher Education

Formerly The Adult Vocational Training Centre, the Vocational Training Programs, located in Fort Smith, are operating more programs on an extension basis in communities throughout the Northwest Territories.

Programs include: cooking in Pangnirtung, Chesterfield, Eskimo Point, Repulse Bay; northern small business management in Cambridge Bay, Yellowknife, Fort Smith, Pangnirtung, Frobisher Bay; office procedures in Inuvik, Rankin Inlet, Yellowknife, Hay River, Frobisher Bay; heavy duty mechanics in Inuvik; housing maintenance in Cambridge Bay, Rankin Inlet, Frobisher Bay; marine training in Hay River; driver education in Fort Simpson, Fort McPherson; heavy equipment operation in Repulse Bay, Pangnirtung, Fort Simpson; trades testing in Pangnirtung, Frobisher Bay, Fort Simpson, Fort Smith.

In Fort Smith increased accommodation was made available for students with families. Library and recreational facilities are available as well as career counselling.

The arctic airport communicators course, (sponsored by local government), fire suppression and first aid are other courses added.

A new trades complex to house the apprenticeship courses for both mechanics and carpentry is nearing completion. Soon NWT government apprentices will be able to take their entire four years of training in the NWT.

The first academic phase of a program in renewable resources management began in September in Fort Smith with 15 students in attendance from the NWT and the Yukon. Two additional field camps were offered in the summer - one in Porter Lake, as the introductory course, and the arctic marine summer camp near Pond Inlet. This two-year diploma program will qualify students as lab technicians, fish and wildlife and forestry officers. The program is 60 per cent classroom instruction in Fort Smith and 40 per cent field work.

The teacher education program gives native northerners the opportunity to become certified teachers. Eleven students completed their training in 1978 bringing to 76 the number who have received diplomas from the NWT Department of Education since the program started in 1968.

The academic and professional courses are presented in Fort Smith, while two seven-week internships are served in Territorial Schools generally related to the cultural and linguistic background of the student teacher. During training, the student is given the opportunity of taking a six-week course at the University of Saskatchewan, Saskatoon. The same university offers advanced standing to graduates who wish to do a degree program in education. The program is presently staffed by a principal and four instructors. The enrolment is 32.

To overcome the shortage of post-secondary institutions in the NWT, the government continued its program of financial support for students pursuing higher education. For the first time students were also sponsored at the Vocational Training Programs and the renewable resources training program. The financial assistance covered tuition fees, transportation, board and book allowance. In addition to the grants the NWT yearly awards a total of 15 bursaries.

Health and Welfare, Canada, operates the only federal dental therapy program in Fort Smith. Students are from the NWT, the Yukon and the provinces. The enrolment in 1978 was 30. This program is a cooperative effort of Health and Welfare, Canada, and the Department of Education, Government of the Northwest Territories.

Recruitment, Personnel and Staff Training

The past year experienced a 30 per cent increase in the numbers of northern native teachers - from 33 to 43 out of a total of 580 teachers. In addition there are nine northern graduates of southern universities employed with the department.

There are 128 classroom assistants on staff. A new classroom assistants training program, instituted in the summer of 1978, allows for classroom assistants to become fully-certified teachers through a combination of on-the-job training and summer courses.

Finance, Research and Planning

The operating budget of the Department of Education during the 1978-79 fiscal year was \$39 015 000 and capital projects \$10 038 000.

St. Joseph's School in Yellowknife was completed for school opening in August.

Fire destroyed the Rankin Inlet School on March 18, 1978. Facilities in housing units were made available immediately and planning is well under way for a replacement school. Log schools in Trout Lake and Nahanni Butte will be completed this year.

The design for the new Coral Harbour school is in the final stages and tenders will be called before April 1, 1979. Portable classrooms are planned for Eskimo Point, Igloodik, Sanikiluaq and Holman Island. A portable adult centre will be erected in Baker Lake.

Department of Local Government

Over the past ten years local government has developed rapidly in the NWT. In 1967 there were two towns and two villages. Today there is one city, four towns, two villages, 18 hamlets and 27 settlements with active councils. All of these communities carry out a broad range of municipal services and other local government responsibilities. During the year Clyde River and Hall Beach became hamlets.

Efforts will be made in the decade ahead to establish the municipal councils as the prime bodies through which the communities can exercise responsibility. Consultation has started to develop ways for Band Councils to formally participate in local government bodies. Also, communities will be encouraged to raise more of their own funds for services and programs.

Airports Program

Within the next five years, most NWT communities with populations over 100 will have an improved runway, air terminal building, navigational aids, airground radios, weather instruments and equipment for airport maintenance. Once improvements are completed these community airports are operated by local people on behalf of the NWT Government.

Major construction projects were completed at 10 locations during 1978 with on-going projects at six other sites.

Fifteen more northerners graduated from eight-week aviation radio and weather courses at the vocational centre in Fort Smith and are now working at community airports as fully qualified observer-communicators. Eight heavy equipment operators received maintenance training and are now working as airport maintainers.

Nearly 40 local people are running 18 community airports. Within five years, approximately 100 northerners will be fully-qualified to run all 42 NWT community airports.

Development and Training Program

The direction for development activities in 1978 was set by a joint regional - headquarters "statement of purpose on development". This paper laid the groundwork for two major long-term activities: The involvement of local people in planning the future of their communities, and the integration of outside resources to support community-based development. In a number of communities, local people have already become involved in data gathering for community planning needs.



Fuel oil tank farm construction, Baker Lake

Training is directed at giving locals the skills to manage and direct their own affairs. The emphasis in training has been on what people can do themselves with particular attention to the primary role of the council in community decision making. A priority on councillor training has supported this role. Training programs were available in 17 subjects from community planning to financial management. Regions and headquarters combined to offer 45 courses in 1978.

Municipal Affairs Program

Emphasis was sustained during 1978 on improvement of sanitation services throughout the NWT. A total of 35 units of mobile equipment was delivered to outlying communities for municipal services such as water delivery and garbage disposal.

During 1978, over \$12 million was spent improving water and sanitation facilities in 32 Northwest Territories communities.

Road paving programs were undertaken in Inuvik and Frobisher Bay. This work demanded considerable engineering expertise as perma-frost conditions are prevalent in both communities. The result will reduce road maintenance costs, eliminate dust problems.

The total real property assessment in the NWT is now \$205 000 000 which yields more than \$8 600 000 in taxation in some 25 communities and staging sites. The assessment program is being improved through the use of computerized data processing.

A major study was undertaken to review water conservation technology applicable in the Northwest Territories. The raw water pump house constructed at Fort Simpson during 1978 will use waste heat from the Northern Canada Power Commission power plant to preheat the community water supply prior to treatment and distribution. This will substantially reduce water distribution energy costs.

Town Planning and Lands Program

General development plans were initiated in Spence Bay, Pangnirtung, Coral Harbour and Repulse Bay with revisions to existing development plans undertaken in Fort Rae and Arctic Bay. In the communities of Pond Inlet, Igloolik, Eskimo Point, Baker Lake, Norman Wells, Rankin Inlet, Holman Island and Whale Cove the general development plans, on-going from 1977, were finalized. The new townsite plan for Resolute Bay has been completed.

Major legal surveys were carried out in Coppermine, Rankin Inlet and Eskimo Point. Surveys were also carried out in Hay River for a market gardening subdivision. In consultation with the Fort Simpson Band Council, a re-subdivision of Lot 5 in Fort Simpson was completed.

The lands section acquired land for the Town of Fort Smith from the Northwest Territories Housing Corporation to enable the town to develop a new residential subdivision. In cooperation with the local councils, land acquisitions were completed in Fort Resolution, Pond Inlet, Pangnirtung and Cape Dorset.

Department of Economic Development and Tourism

In 1978, the overall planning in the Department of Economic Development and Tourism changed from preparing for the construction of a Mackenzie Valley pipeline to identification and assessment of the options available to stimulate the territorial economy.

Similar new initiatives were announced by the Minister of Indian Affairs and Northern Development which led to the conference on economic prospects in Hay River. This conference was the first time people of all backgrounds from throughout the NWT came together to discuss economic issues and opportunities. It was followed by similar conferences in Rankin Inlet and Frobisher Bay.

A business advisory committee was established after the Hay River conference to monitor government response to the issues identified at the conferences and to represent the interests of the people of the NWT in economic planning.

A comprehensive economic strategy is being developed for the 80's. It will include a major tourism development plan and increased emphasis on tourism promotion, a leading planning role in major primary sector projects to maximize northern participation, new measures to develop the northern labour force skills, encouragement of northern business development and special attention to development of the traditional economy as a primary industry.

Planning and Development Division

During 1978 the Planning and Development Division was involved in formulating a general development agreement between the Government of the NWT and the Department of Indian Affairs and Northern Development and an interim subsidiary agreement between the NWT, DIAND, Regional and Economic Expansion, and Employment and Immigration Canada. This subsidiary agreement will focus on many of the concerns raised at the Hay River conference on economic prospects.

The division provided support for the regional staff evaluating and preparing recommendations on applications received under the Special Agricultural and Rural Development program (Special ARDA).

Arrangements were made for the International Sealskin Conference, held in Yellowknife in August, to determine ways to offset the decline in sealskin markets. Kissiliriyeet, a committee, was established to provide information to hunters and help them upgrade the quality of skins, encourage total use of seals and develop a public information program.

Business Service and Tourism Division

The Business Services and Tourism Division manages Travel-Arctic, territorial parks and provides administrative support to the boards of the fishermen's loan fund, Eskimo loan fund and small business loan fund. It regulates and monitors the operation of cooperatives.

The year was prosperous for the tourism industry in the NWT with good bookings reported by hotels, lodges, outfitters and tours. On the Nahanni River one of the boat tour outfitters experienced an upsurge in business after several slow years.

There are several new businesses available to serve tourists and two new hotels were constructed, in Holman Island and Gjoa Haven, using tourism development grants. In Fro-bisher Bay the ten-room Inuit Hotel opened.

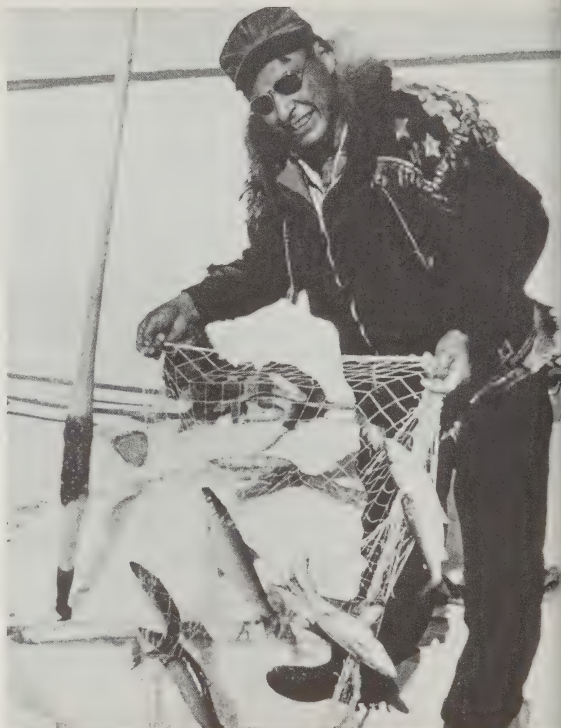
The Travel Industry Association of the NWT (TIA) has gained strength. Membership has grown and a good exchange of information occurs through a regular newsletter. TIA has participated with TravelArctic in several promotional efforts, including travel shows and a travel industry market-place. The Territorial Government provided funds for the association to hire a manager.

TravelArctic answered a record 25 000 inquiries, about 10 per cent more than 1977. Programs have included travel shows, travel trade shows, travel agent tours, advertising and production of a travel map and explorers' guide.

In 1978, one new cooperative was incorporated and dissolution procedures were initiated on two existing ones. A total of 41 cooperatives are now active in the NWT. The cooperatives membership exceeds 3 500 and the total volume of business transacted is in excess of \$13 million annually.

Much of the income generated by the cooperatives is returned to the NWT economy in the form of wages and benefits (which exceeded \$3 050 000 in 1978) and purchases from suppliers. Cooperatives are a significant employer, providing more than 400 full time jobs and at least an equal number of part-time employment opportunities.

A five-year funding program for NWT cooperatives was initiated in 1978 under the Department of Indian Affairs and Northern Development in conjunction with the Territorial Government. To date, working capital contributions in excess of \$2 500 000 have been made to the federation and individual cooperatives. As well, approximately \$500 000 was provided for training people.



Commercial fishing on Great Slave Lake

At a special meeting on the boards of directors and supporters of the NWT credit union system in Hay River April 7, a recommendation that all NWT credit unions be dissolved was made to the Commissioner. This has been completed. All funds held by the four credit unions, as well as all loan portfolios, were transferred to branches of the Royal Bank of Canada in Yellowknife and Hay River. All losses which were incurred as a result of this move were guaranteed by the Territorial Government and the Canadian credit union movement. The total loss will be just under \$1 million.

The Indian business loan fund (formerly Indian economic development fund), administered by federal staff located in Territorial Government offices, approved four Indian business loans totalling \$37 300, made 11 contributions totalling \$519 800, and six stabilization grants to reduce outstanding loans by \$212 533 in the January-August period.

Three meetings of the board of the NWT Eskimo loans fund were held in Yellowknife during the first nine months of 1978 and loans totalling \$592 675 and contributions valued at \$168 300 were approved.

The board of the small business loans and guarantees fund held six meetings during the first nine months of 1978, all of them in Yellowknife. The board approved loans totalling \$920 150 and guarantees totalling \$100 000.

The Great Slave Lake fishermen's loan fund board approved loans totalling \$117 094.

The special ARDA agreement, signed in 1977, introduced a new assistance program to the NWT which in the last year has become well established. During the first eight months of the year a total of 73 applications for financing were received, resulting in 33 offers for financial assistance totalling \$1 198 000 was provided in 33 cases and 28 applications are still in process. The program created approximately 37 man years of employment and 318 were people assisted under the non-commercial aspects of the program.

A major study is now under way to evaluate parks legislation and policies in light of present needs and current Parks Canada plans for the Northwest Territories. Federal government plans include the creation of several National Wilderness Parks in the vicinity of Tuktoyaktuk, Banks Island, Wager Bay, Bathurst Inlet, Ellesmere-Axel Heiberg Island and Artillery Lake.

Employment and Training Division

The NWT government is currently expanding its capability to provide apprentice theory courses. It is anticipated that in 1979 some NWT electrician and plumber apprentices will be undertaking training at AVTC in Fort Smith, in addition to the carpenters, heavy duty mechanics and housing maintenance servicemen who currently train there.

As of March 31, 1978, 394 apprentices were in training across the Northwest Territories, working in 25 different trade areas. Approximately 100 were employed by the territorial government. Under the tradesmen's qualifications program, 76 tradesmen were certified through examination, including 19 with interprovincial status. In addition, 34 apprentices completed training and were certified as journeymen, 28 with interprovincial status.

The main thrust of the apprenticeship program in 1978 was establishment of advisory boards and committees to provide industry input into training programs. The apprenticeship and tradesmen's qualification board is improving the quality of apprenticeship training in the North. It is supported by five trade advisory committees in the carpenter, mechanics, electrical, housing maintenance serviceman and construction mechanical trades.

The division provides northern residents with opportunities to enter positions in the territorial public service. Training programs are developed with the territorial government departments to provide individuals not otherwise qualified to enter the public service with on-the-job training and experience. Individuals who successfully complete a training program are appointed to positions up to and including the middle management level.

The division also enters into on-the-job training contracts with private sector employers. These contracts provide employers with salary assistance while individuals are trained to acquire skills for continuing employment. The program has created employment opportunities in the mining industry, in particular, which has taken a leading role developing the employment potential of the North.

Projects and Marketing Division

As of April, 1978, there were 30 projects and 18 development craft projects employing approximately 1 000 workers and generating \$3 million in revenue and \$2.5 million in income to territorial residents.

Quality control was emphasized to ensure that production satisfied market demands. During the year, progress was made at the Hay River furniture project and the Frobisher Bay jewellery project. The most common problem areas were poor management and a lack of coordination between production and marketing efforts. These will be major considerations in 1979.

As a result of an extensive search in the Keewatin region, a large supply of soapstone, sufficient to meet Keewatin needs for a number of years, was located in the Kaminak Lake area. Over 100 tons were quarried for the settlements requiring soapstone.

Displays and working exhibits were provided for the 1978 Arctic Winter Games and for the Commonwealth Games in Edmonton.

For the Commonwealth Games, two of the major department stores displayed artifacts and finished arts and crafts products. As well, three Inuit carvers and five Dene crafts people, selected from across the territories, demonstrated their skills. Performances were given daily in Edmonton by a group of five Inuit drummers and dancers and five athletes from the Northern Games.

Significant improvements in sales and marketing of NWT arts and crafts were made in 1978. Direct sales efforts have been strengthened by the employment of two sales representatives in Ontario. Improved access to the large eastern Canada market will mean increased sales. The marketing section participated in the New York International Fur Week for the first time. Traditionally designed fur garments from the fur shops in Tuktoyaktuk and Aklavik were on display.

An extensive mail order marketing program for Frobisher Bay sterling silver jewellery was carried out in cooperation with the Yellowknife Exhibition Association. Every household in Ontario received a mail order brochure and approximately 2.5 million pieces of mail were distributed throughout Canada.

Hire North Program

The Hire North program is funded by the Department of Indian Affairs and Northern Development as a part of the federal government highway construction program. The program, administered by the Government of the Northwest Territories, involves native peoples in the management and operation of major construction projects.

The Hire North Committee was reorganized in 1978 to provide greater management involvement of the Dene and the Metis people. The committee establishes the general program direction and recommends management policies.

When the Minister of DIAND announced the federal government's approval for the construction of the Liard Highway, Hire North was assigned two sections for construction-training.

Department of Natural and Cultural Affairs

The Department of Natural and Cultural Affairs brings together programs relating to recreation and leisure time, cultural and traditional life styles, public library services, a museum and historical preservation program.



Hunting and trapping at an outpost camp in the Mackenzie Valley

A landmark in 1978 was the passage by Territorial Council of the new Wildlife Ordinance. It was the culmination of years of work by people in the communities, the game advisory council, the wildlife service, and members of the Legislative Assembly. The act will be proclaimed in 1979 and wildlife management information will begin to flow into the communities. This will continue into the 80's with an improved communications program of translated research and survey reports, films, and audio-visual programs.

In the decade ahead other areas of the department will expand their services. A new program will assist communities with their own recreation programs and by the mid-80's, 22 communities could have experienced recreation directors. The Heritage Centre will promote and establish museums and cultural centres throughout the NWT. Library services will be extended to the 25 per cent of the population still without access to local libraries.

Wildlife Service Programs

The ultimate goal of the wildlife service is to turn over to communities the administration of assistance programs in resource harvesting. In 1978 the first major step was taken in decentralizing responsibility of the administration of trapper's incentive grants, trapper's assistance, community hunts, the fur marketing service and the outpost camp program. In some instances the local hunters and trappers associations are now administering community hunts, the outpost camp and trapper assistance programs.

Some NWT hunter and trapper associations have become more active in wildlife harvesting through special ARDA. Projects range from a few thousand dollars for construction of trapping cabins to over \$90 000 for freezer facilities and country food outlets.

The outpost camp program, now in its fourth year, continues to be popular with northerners wishing to return to the land. Forty-four camps are being maintained, providing assistance to 513 people.

Research continued on wildlife, particularly polar bear, muskox and barren ground caribou, vital to the NWT.

The recurrence of the anthrax disease in the Hook Lake area of the Slave River lowlands closed hunting of bison in that area to prevent the disease from spreading to humans.

Researchers helped the wildlife service take steps toward effective long-term caribou management by developing a population monitoring program. The declining Kaminurik herd of the Keewatin is being monitored to develop, with local hunters and trapper associations, a plan to increase the population of the herd.

The fur market is still improving with excellent prices for longhaired species. The sealskin is regaining popularity after last year's drastic slump. Total fur production increased from \$3.7 million in 1976 to \$4.3 million in 1977. It is expected to exceed \$5 million in 1978.

Museums and Historical Programs

Construction of the Prince of Wales Northern Heritage Centre is now completed and the various sections of the centre set up and operational. These include administration, archives, curatorial, education-extension, exhibition, historic programs and research. Much planning and work went into preparation for the opening ceremonies, attended by His Royal Highness Prince Charles, who opened the centre April 3, 1979.

The heritage centre's permanent collections are now located in the reserve collection storeroom. The registration room and the conservation laboratory are also in full use. Throughout the year, artifacts were acquired, mainly by donation, for the permanent collections, and loan materials from other institutions were obtained for the opening exhibitions.

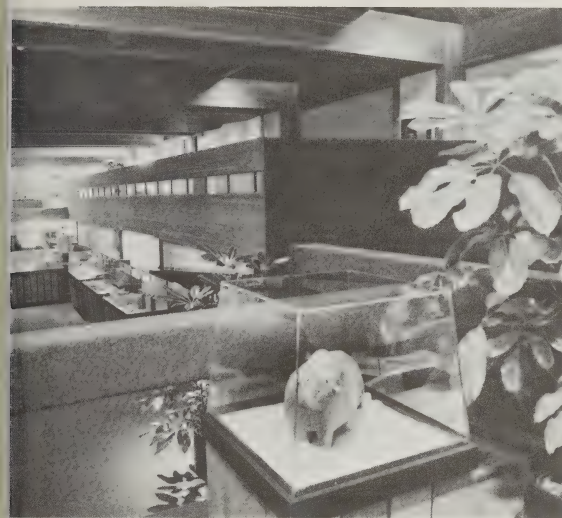
Significant additions have been made to the permanent collections in the fields of archaeology and ethnology and the fine and decorative arts. The latter includes paintings by contemporary northern artists, as well as 20 early Inuit prints. Canadian and American museums loaned more than 200 artifacts to enhance the opening exhibitions.

The Dealy Island Archaeological project, under the direction of the Northern Heritage Centre, stabilized Kellett's storehouse and completed the archaeological sampling. Archaeological surveys were also conducted at Bathurst Inlet, the Rawalpindi River area, and at Aston Bay on Somerset Island. In all, 21 archaeological permits were issued in 1978.

Library Services

Approximately 75 per cent of the population of the Northwest Territories now has access to community library services and approximately 25 per cent of the total population are registered members. The national average is 20 per cent.

In the children's program, circulation has grown by 33 per cent in the past two years. More than 200 classes were visited in 1978 and it now appears that the visits will have to be spread out over an 18-month period.



Prince of Wales Northern Heritage Centre, Yellowknife

In 1978 use was made of the cassette decks supplied through the David Kootook memorial program. Kits of books and tapes have been made up with the help of a reading stimulation grant made two years ago by the Canadian Association of University Women. The kits are for beginning and slow readers who follow the words while listening to the story. At present, these kits are available only for young readers but it is hoped to develop this program to the adult level.

Recreation Division

In March of 1978, Hay River and Pine Point co-hosted the fifth Arctic Winter Games that included participants from Alaska, Yukon and the Northwest Territories. Unfortunately, northern Quebec withdrew for lack of financial support.

Prior to the selection of the 1978 NWT Arctic Winter Games team, some 1 500 athletes from across the Northwest Territories participated and completed in regional and territorial elimination trials in 14 sports. The Sport North Federation coordinated the selection of teams, organizing trials and fund-raising for the NWT contingent.

The ninth Northern Games, where Inuit and Indian people from 32 communities across the North participate in traditional games and activities, were held in Eskimo Point.

For the second year in a row a team of disabled athletes competed at the Canadian Games for the Disabled, held for 1978 in St. John's, Newfoundland. Six athletes competed and won a total of nine medals; three gold, five silver and one bronze.

Additional assistance is now available to communities to meet the higher costs of recreation programs. The government offers a program of funding over and above the per capita grant available. A majority of the communities have taken advantage of the new assistance.

Department of Social Services

The Department of Social Services emphasized community-based control of services according to the principles of devolution. Discussions have taken place with officials of Frobisher Bay concerning the first NWT devolution of responsibility for social services.

The major thrust for the 80's will increase the self-reliance and independence of the individual and the family. Social problems will be dealt with more often by the people in each community. Responsibilities for the planning and provision of social services will be handled by communities as their willingness and capacity to deliver services develops.

Alcohol and Drug Program

Four major alcohol and drug education workshops were held. They involved 115 participants from 23 NWT communities. Most participants were active members of community-based alcohol education committees, while others were staff members of the Department of Social Services and personnel with projects funded through the alcohol and drug program.

Nine previously funded and eight new community alcohol projects were approved for funding by the NWT Alcohol and Drug Coordinating Council. The council performs a dual role as the advisory board to the alcohol and drug program of the Department of Social Services and the regional board for the federally-sponsored National Native Alcohol Abuse Program.

NWT communities continue to exercise the local option clause in the Liquor Ordinance to institute prohibition of alcohol within their boundaries. During 1978 Rae Lakes, Fort Franklin, Fort Norman, Gjoa Haven, Snowdrift, Sanikiluaq and Fort Resolution added their names to the growing list of communities where this ban is in effect.

Corrections Service

The territorial inmate population levelled during 1978 in contrast to the rapid increases of the previous five years. A variety of factors contributed to this trend, including reduced economic activity, the growing restriction on availability of alcohol and increased use by the courts to sentences other than incarceration.

As a result, plans to construct a new minimum security facility in Inuvik were deferred. Plans to replace the South Mackenzie Correction Centre in Hay River continued with construction in the spring of 1979.

A major thrust in 1978 was the expansion of inmate work activities. Projects ranged from the supply of wood to territorial campsites to municipal snow removal and clean ups.

The Territorial Courts continued the trend towards less imprisonment. In 1978 departmental probation officers were involved in major projects in Inuvik, Fort Simpson, and Fort Smith where offenders, instead of being sentenced to incarceration, were required to perform work in their communities. The Corrections Service plans to make this sentencing available in additional communities.

Family and Children's Services

Family and Children's Services also concentrated on community involvement, including a workshop on "youth and the community". Participation was by community representatives from across the territories. The conference emphasis was on what communities could do to prevent problems and rehabilitate youths who have been in trouble.

In the past year the number of camp programs for children ranged from relatively short periods to longer programs in Inuvik. Land camps have been used in Coppermine and the Baffin to provide children with a positive experience and develop in them a sense of self-worth and identity.

The group home program was extended with the opening of a home in Hay River and one to augment the services of the Fort Smith Centre.

Funds for community social service activity were fully-utilized as groups sought financial support for community-based programs. Included in the requests were submissions to provide home services to the elderly, day care for children and a project by the Native Women's Association to recruit native foster homes.

Income Maintenance

A further increase in the food allowance and increases in the clothing, household, personal care and incidental allowance for the elderly were made in April, 1978.

In July, 1978, a program was implemented to supplement the incomes of senior citizens largely dependent on the federal old age security system. The program provides \$50 per month to eligible persons. It is estimated that 1 000 people will receive this payment each month.

During the year an average of 1 391 families received assistance each month. The average monthly payment was \$220.59. The average family size receiving assistance was 3.6.

Department of Health

On August 14, 1978, the Territorial Government's Department of Health and Social Services was divided into two departments to prepare for the transfer of the responsibility for federal health services to the Northwest Territories Government.

The transfer is a major step to provincial-type functions carried out by the Government of the Northwest Territories. Every effort is being made to ensure that appropriate medical services are available across the territories. A hospital system is being developed with nursing stations for acute care. The Stanton Yellowknife Hospital will become a major referral centre and small regional hospitals will be built at Cambridge Bay and Rankin Inlet.

More emphasis will be placed on prevention of disease and promotion of community health and acute services.

Health Centres

In 1978 Hay River Health Centre marked its first complete year of operation. Both the in-patient and ambulatory care sections of the centre were fully-operational, providing regional services for the south Great Slave Lake Area.

In the spring, construction commenced on the Fort Smith Health Centre, expected to open during the summer of 1979. When completed this facility will provide community health services for Fort Smith.

The functional program and site analysis were completed for the Stanton Yellowknife Territorial Health Centre. During 1978, program and service development continued at the Stanton Yellowknife Hospital, as its role changes to Territorial Referral Centre. The hospital installed a computerized financial system and established a rotating medical residency program in affiliation with the Faculty of Medicine, University of Calgary. Modern automated equipment was purchased and laboratory staff increased to allow the hospital to provide regional laboratory services.

An ophthalmic technician training program has been proposed for Stanton Yellowknife Hospital. The Departments of Health, Education and Economic Development and Tourism are involved in the program development.

Consulting services were available to the hospitals and expanded to cover the areas of: administration and finance, nursing, nutrition and dietetics, physiotherapy, occupational therapy, speech and hearing, ophthalmology, medicine, obstetrics and gynecology.

Administration

Policies and procedures are being reviewed in response to new programs and improved services. Steps continued to be taken to improve the administration of health programs and services. A management information system is being expanded. The improved information system will enable the Department of Health to provide a stronger statistical base for services and programs.

The services provided under supplementary health programs have been expanded and new policies developed in relation to cystic fibrosis and cleft lip and palate.

Territorial Hospital Insurance Services

In the 1977-78 fiscal year \$13 922 305 was spent by the Territorial Hospital Insurance Services. The average cost per patient day was \$173.65.

Medical Care Services

In the 1977-78 fiscal year \$3 000 000 was spent by the Northwest Territories Medical Care Plan. A total of 210 086 claims were processed. The average payment per claim processed was \$14.28.

Department of Information

The Department of Information in 1978 started its radio and television communications program to expand community broadcasting facilities. This five-year program is introducing television and regional radio to communities of 250 to 500 residents.

In November, 1978, television was made available to Fort Norman and Coral Harbour received television and regional radio in March, 1979. Arctic Bay will have the same service by June, 1979.

The department installed a local radio broadcasting station for Clyde River and assisted with a similar local station in Coral Harbour.



Community radio station at Pond Inlet

Plans are under way to provide radio and television to Fort Liard, Chesterfield Inlet and Pelly Bay in 1979-80.

As broadcasting facilities expand throughout the Northwest Territories it becomes possible to redirect communications with greater emphasis on audio-visual.

A restructured and expanded internal information package will be emphasized by the Department of Information in the 80's. It will start in 1979 with a direct line telephone system to keep employees informed on a daily basis.

Public Affairs

In 1978 the Public Affairs Division began re-directing its program from print to audio-visual.

A grant program for existing community radio stations was started. During 1978-79 14 community radio stations took advantage of the grant program, which provides funds to assist with operating costs. The government supplies \$5 to every \$1 raised by the local stations to a maximum grant of \$5 000 per station.

With the assistance of the Baffin regional administration, work began to create two new positions. A northern native information officer will be trained on-the-job in Frobisher Bay by an experienced communicator. After the training period, the trainee will be the full information officer in the region.

The goal is for each regional office to have an information advisor working directly with the regional directors and the public.

During the year the Public Affairs Division produced more than 300 news releases, responded to hundreds of public and media enquiries, and wrote advertising for use in the NWT newspapers.

Publications and Production

Among new publications produced by the Publications and Production Division was a commemorative book on the Arctic Winter Games entitled *For Those Who Were There*. The book, extremely popular in the North, highlights all aspects of the games.

A new public information series of brochures was produced. It includes information papers on the Inuit, Dene, canoeing, transportation, climate, flora and fauna, lands and an updated general information pamphlet *Canada's Arctic Today*.

Based on success of the department's first poster series *Northern Legacy* a second series was produced called *Arctic Wildlife*. The series is a collection of five full-colour posters, including Polar Bear, caribou, Snowy Owl, birds of prey and sea mammals.

The department also produced a grants and loans handbook, a collection of all territorial grants and loans available to individuals, organizations and municipal governments. It will be up-dated annually.

A first step was taken to improve internal communication with production of a more attractive and comprehensive staff publication. A readership survey was done and the results used to revise the publication.

The government's first publications catalogue was distributed early in 1978, listing more than 100 government publications. In the first months the catalogue generated over 3 000 requests for individual publications.

The printing bureau completed its first year of a quick-print service operation. The service has saved money by cutting photocopying costs. The printing bureau continues to place the great majority of government printing with private enterprise.

Interpreter-Translator Corps

Workshops in time management, syllabics, English upgrading, civics, translation and interpreting skills were held in Yellowknife throughout the year. These workshops were attended by Interpreter Corps members from the regional offices and Yellowknife. For the first time, interpreter-translators from other agencies were invited to attend.

A training manual for interpreter-translators was developed and is being distributed to all agencies interested in developing their own training programs.

In November, the NWT Interpreter Corps co-sponsored an Inuktitut word conference with the Cultural and Linguistic Section (DIAND) in Ottawa. The conference, attended by representatives from northern Quebec and Labrador, discussed metric, financial and mineral exploration terms and their equivalents in Inuktitut.

In addition, delegates took the first step to developing a training program for all Inuit people interested in careers as interpreter-translators. The Inuit Cultural Institute is responsible for developing the program. Committees were formed to assist ICI in its planning and to prepare the next Inuktitut word conference, tentatively scheduled for Ottawa in June, 1979.

Department of Planning and Program Evaluation

An accurate census for the NWT was completed and data compiled to project populations for ten years. The January, 1978, population of the Northwest Territories stood at 46 386.

Reports on Family Allowance, Old Age Security data, and a statistics catalogue were compiled. Major emphasis was placed on obtaining statistical information collected by federal agencies so it could be used by the territorial government.

The department continued to work with Imperial Oil, Petro Canada and Dome/Canmar to ensure that the socio-economic concerns of northern residents were taken into account in the industry's oil exploration.

Policy and Evaluation

Work was begun on compiling a policy manual to cover the principles and intentions that form the government's programs.

Evaluations of government programs include: day care, apprenticeship, the Alcohol and Drug Coordinating Council, continuing education, and cultural inclusion.

A plan showing the responsibilities assigned to each department, with intended results, tasks and progress indicators was introduced across the government. By assigning staff and financial resources to these tasks, greatly improved planning, forecasting and budgeting is possible. Early indications are that this plan is helping decentralization and may be the basis of a better management information system. This was a joint effort of the Department of Finance and the Department of Planning and Program Evaluation.

Metric Conversion/Government Liaison

A Metric Information Centre has been set up to display and distribute information and materials. A travelling exhibit is also available for special events, fairs and conferences.

The services of this centre are available to most communities in the NWT.

This division also has responsibility for Status of Women Committee and liaison with the Advisory Committee on Northern Development. A Plan of Action Committee has been established to promote equality between sexes. This committee is based on the World Plan of Action drafted by the United Nations in 1975 (International Women's Year).

Science

The Science Division is the point of contact with the Science Advisory Board for the NWT, and with science and technology in various federal and other institutions. Emphasis is on the practical application of science and technology to northern living and development.

The licencing of scientific research in the North and consultation with communities which will be affected are also responsibilities of this division. In 1978 about 160 licences were issued. Twenty-nine communities were consulted concerning potentially disruptive research.

Special Projects

The development of the townsites of Nanisivik, on the northern tip of Baffin Island, has been a major project over the last four years. Construction was scheduled for completion in 1978 and the turn-over of the project to various other departments is to be accomplished by early 1979.

Other projects undertaken in 1978 included the design and supervision of construction of a large log community hall at the Snare Lake outpost camp, and consultation on the proposed town centre complex for Rae.

Department of Public Services

In June, the Department of Public Services moved to new offices in the Yellowknife Court House. Formerly the department was scattered in various buildings.

Directions for the 80's will see expansion of court services with regional courts likely in Inuvik and Frobisher Bay. An expanded legal aid program is foreseen as well as extension of driver testing throughout the territories, driver safety, and a growth in the responsibilities of the labour division.

Legal Services

The Legal Services Division provides legal advice and services to the territorial government.

Work is progressing on a consolidation of regulations. The publication should be available early in 1979.

The Public Trustees office continues to expand its operation and a total of 209 estates are currently being administered.

Inspector of Legal Offices

The inspector of legal offices is responsible for the recruitment and training within the territories of all justices of the peace and coroners. Currently there are 75 active coroners and 95 justices of the peace. A register is also kept of all notary publics and commissioner for oaths to ensure that sufficient numbers are available to serve the public in all regions.

During the past year, this office assumed the responsibility of chief territorial firearms officer, to administer the amendments to the criminal code that pertain to firearms legislation. Within the territories, all members of the RCMP have been named firearm officers.

Court Services

The court house in Hay River is functioning well and the new court house in Yellowknife was officially opened on June 23, 1978. Facilities in this building include a modern legal library.

On June 22, 1978, Frank G. Smith officially retired as Chief Magistrate, a position he had held since 1974. James R. Slaven was sworn in as Chief Judge of the Territorial Court by Mr. Justice C.F. Tallis of the Supreme Court. Judge Slaven had been a magistrate since August, 1976, and prior to that time was chief of legal services for the territorial government.

On August 14, Peter Paul Ayotte was sworn in as a Judge of the Territorial Court in Yellowknife by Mr. Justice C.F. Tallis. Judge Ayotte has been a member of the NWT Bar since March, 1975.

Legal Aid

A joint territorial-federal report recommending restructured and expanded legal services to territorial residents was endorsed in principle by council at the May session. Subsequently, the report's proposals were embodied in a submission made to Treasury Board.

During the year northerners were served by the existing legal aid program. These programs were offered by the legal aid plan on a territories-wide basis, by Maliiganik Tukiisiniakvik serving the Baffin Island region and by the NWT Native Court Workers' Association in the Mackenzie Valley communities.

Consumer Services

As in the past, there was increased use made of consumer services. Many enquiries or complaints were handled in collaboration with federal or provincial authorities. The close working relationship continued with northern branches of the Consumers' Association of Canada.

Safety Division

On May 1, 1978, the occupational health section became a reality. This complements the existing sections of the Safety Division which are fire, mechanical, electrical and industrial safety. Negotiations are continuing with the federal government to transfer the responsibilities for the administration of the Mining Safety Ordinance.

The labour section was transferred to the Safety Division September 1. Amendments are being prepared to the Labour Standards Ordinance. The labour section will continue to deal with problems and complaints in the fields of labour standards, fair practices, and human rights.

In 1978 industrial accidents were recorded for the first time. In an eight-month period, 1 222 accidents were reported of which 410 were time-lost accidents. Safety education programs have been initiated to create hazard awareness in the work environment.

Arson and mischievous fires increased drastically in 1978. The dollar loss amounted to more than \$6 000 000. Every effort was made to control this outbreak.

Motor Vehicles

The Motor Vehicle Branch developed a program to assume driver testing duties on the Mackenzie Highway system. The new program adopts the "class" system of testing and licensing of motor vehicle operators. There are separate written tests for each class of licence desired, an eye examination, and a driver test.

A total of 20 189 drivers were licenced, generating a revenue of \$52 670 as compared to the previous year figures of 15 166 drivers and \$41 063. A total of 19 977 vehicles were registered, generating a revenue of \$590 890 as compared to previous year figures of 15 562 vehicles and \$436 792.

There were a total of 812 accidents, including three with fatalities.

Legal Registries Division

In the land titles section, a conversion to the open or loose title system began in late October. This system, used in other jurisdictions, will increase efficiency in the land titles office.

As with previous years, the number of companies incorporating or registering to do business in the Northwest Territories increased. There were a total of 273 new registrations in 1978 to bring the total number of companies on record to 3 360.

Other Licencing

There are 105 insurance companies licenced to carry on business in the Northwest Territories. A total of 95 licences were issued authorizing the writing of policies for general, life, accident and sickness insurance.

A total of 630 business licences have been issued in unorganized area of the Northwest Territories, an increase of five per cent over the previous year.

A total of 73 professional licences have been issued to dentists, doctors, optometrists, and pharmacists. There have also been 125 annual permits issued to practice medicine.

Vital Statistics

Vital Statistics registered 217 marriages, 1 027 births, and 181 deaths.

Highway Transport Board

The Highway Transport Board, appointed by the commissioner to regulate the commercial trucking industry in the territories, processed 195 applications for certificates of operating authority. Of these, 73 were issued to companies or individuals resident in the territories, while 122 were issued to non-resident trucking companies, mainly from Alberta.

In addition, the board issued operating authority to two resident companies and one non-resident company to operate on the Dempster Highway, when opened.

Public Utilities Board

The Public Utilities Board, appointed by the commissioner to deal with applications brought before it by utilities in the territories, dealt with three applications that involved all areas in the Northwest Territories.

The board reviews the financial operation of the utility and ensures that the cost to the consumer represents the costs of the utility plus a fair return on investment.

During 1978, Northern Canada Power Commission (NCPC) presented operational policies to the board for approval. Although NCPC is not legally bound by board decisions, it has complied with all board orders to date.

Department of Finance

The Department of Finance provides direction in financial management and a wide range of services in support of government operations.

During 1978, emphasis was on implementation of the recommendations in the auditor general's financial management and control study report. The existing financial information system was improved and development of a new financial information system got under way.

Financial Services

The Financial Services Division provides financial and payment services to all departments and regions. This involves payment of services to employees and suppliers, revenue collection, taxation, management of funds and investments and insurance. It prepares the Territorial Accounts, manages the consolidated revenue fund, and provides financial advisory services to other government departments in the design and implementation of accounting systems.

During the past year, major efforts were aimed at further reducing payment times on suppliers' accounts. This was accomplished through internal realignment of responsibilities and development of improved documentation and training of employees.

At the regional level, the role of the regional superintendent of finance was developed to recognize his responsibilities as regional financial manager.

Budgets and Fiscal Planning

The Budgets and Fiscal Planning Division provides financial planning assistance and staff support to the executive subcommittee on finance and the Legislative Assembly. Support is also given in the annual federal-territorial financial negotiations.

The division plans, coordinates, and consolidates the operating and capital budgets of the Government of the Northwest Territories.

In 1978 further refinements in the budgeting process were made with the introduction of accountabilities and tasks. Improvements in the capital planning processes were implemented and computer analysis of the five-year capital plan was completed.

Supply Services

The Supply Services Division purchases goods and materials, transports and warehouses them, does the annual sealift, and provides petroleum products in communities without private sector distribution.

The Petroleum, Oil and Lubricants (POL) Section provides bulk petroleum products in 38 communities. Training was provided to regional staff and settlement contractors to facilitate distribution of aircraft fuels. Increased emphasis on assisting selected communities to take on more responsibilities is also under way.

The transportation section participates in the annual sealift, the use of air and marine freight and coordinates all government air charters. Decentralization of operational duties for the annual resupply has enabled the headquarters group to shift resources to broader matters.

The purchasing section acquires a variety of goods and negotiates prices and contracts. Responsibility for the acquisition of many commodities was transferred from headquarters to the regions, resulting in a substantial increase in regional purchasing staff.

The warehousing section maintains inventories of supplies and is responsible for the disposal of surplus, obsolete and other materials. Inventories at the regional offices were consolidated. New or improved warehousing and control systems were established in various settlements.

Systems and Computer Services

The Systems and Computer Services Division provides specialized service in information systems design, records management and computer operations. It guides and supports the design, building and implementation of administrative and computer systems, evaluates computer and related equipment alternatives and provides a computer service. The division advises on setting up filing systems, develops record retention and disposal schedules, coordinates the preparation of procedural manuals and designs and controls forms.

This year, an expansion and improvement in the use of remote terminals has brought the computer's facilities closer to its users. Several new systems were developed and put into production. The old age supplementary benefit cheques are now being produced and controlled through the use of the computer. Another major new system has provided a model for local government officers to help strengthen capital spending in water and sanitation facilities in communities. In addition, a student record information system and a government housing inventory system were developed.

Department of Personnel

The Department of Personnel coordinates the personnel management of the territorial public service. It establishes terms and conditions of employment, provides manpower planning, maintains employer-employee relations, determines compensation, and develops administrative policies.

It creates information flows for employees, potential employees, and employee associations internally, with other departments, and the regions.

Manpower Planning

A total of 1 152 staffing actions were completed during 1978, which resulted in 966 appointments from the North and 156 from outside the territories. Of these 263 were promotions and 155 were transfers from within the public service.



Elizabeth Kooneeloosie at work at the weaving project, Pangnirtung

During the summer of 1978, more than 100 northern students were offered employment under the summer student program at various locations in the territories.

In its first complete year of operation, the Office of Native Employment introduced native people to opportunities for employment, promotion, education or training in the public service. The office is ombudsman for present and potential native employees, often becoming directly involved in all phases of the recruitment process.

As of June 1, 1978, native employees comprised just over 26 per cent of the public service work force, or 745 of the 2 827 total staff. Statistics are being compiled on the salary and occupation levels of native employees.

Some 250 employees attended one or more of the dozen courses sponsored by the training section. These in-service training courses were conducted at headquarters and in the regions. Included were sessions on skill development, management effectiveness, and northern survival.

Employee Relations

The Employee Relations Division was involved throughout the year in collective bargaining with both the Northwest Territories Teachers' Association and the Northwest Territories Public Service Association.

A satisfactory agreement was reached with the Teachers' Association on April 1, 1978. The agreement was a two-year contract, providing for a reopener clause on monetary issues in the second year.

An application by the Public Service Alliance of Canada for certification as the bargaining agent for territorial public servants was examined and denied by the Canada Labour Relations Board. However it complicated negotiations with the Public Service Association.

Negotiations with the Public Service Association resulted in a number of issues being placed before the courts. An arbitrator directed both parties to resume contract talks. The resumption of negotiations resulted in an agreement being reached on October 15, 1978. The one-year contract was ratified and officially signed December 8, 1978.

Compensation

The Hay Plan of evaluation and compensation for senior management personnel was extended to include senior staff in the regions.

During 1978, approximately 150 job audits were conducted by the classification section. Training seminars were held to explain the classification system.

Pay research and analysis was conducted for a number of occupational groups to ensure pay scales compared favourably to the job market. The pay research section was also involved in extensive work in preparation for collective bargaining.

Administrative Policies

Pre-negotiation joint consultation sessions with both employee associations brought about significant improvements in settlement allowances, private accommodation allowances, removal assistance, and travel expenses.

The conversion of rental rates for staff accommodation, was completed. Utility charges were also converted to metric calculations. Ceilings were placed on rents to avoid excessive increases from the new calculating method. In addition, an appeal committee was established to review applications for the staggering of rent increases and other considerations.

On April 1, 1978, the property management for staff accommodation was transferred to the Department of Public Works. The Department of Personnel continues to be responsible for the allocation of staff housing units and for establishing rental rates and conditions.

Department of Public Works

The Department of Public Works supports the program departments and is directly involved with development works in the North. The department is engaged in the construction of schools, offices, water and sewer systems, garages, warehousing, firehalls, settlement offices, campgrounds and roads.

It is also responsible for the maintenance of all government-owned installations, facilities, vehicles and heavy construction equipment.

To achieve its objectives the department needs a firm and long-range capital plan. The establishment of the position of special advisor to the commissioner on capital planning is a major step in this direction. Other objectives include moving away from a breakdown maintenance system towards a proper preventative maintenance program and a complete review of all installations from an energy conservation point of view.

Architectural Division

Major buildings completed in 1978 included the trades complex at the Adult Vocational Training Center in Fort Smith. The structure was the first in the NWT to be designed, tendered and constructed in the metric system. Other educational projects completed included small log structures at Nahanni Butte and Trout Lake as well as a number of prefabricated classrooms at various locations. Design work for a new school in Rankin Inlet is now under way and construction is scheduled to start in 1979 on new schools in Fort Norman and Coral Harbour.

Various forms of community service complexes are now being considered for several communities. Preliminary investigations are taking place in Paulatuk, Broughton Island, Baker Lake and Coral Harbour, while plans are under way for a complex at Pelly Bay where construction of the first stage is to start in 1979. A high degree of community consultation in planning and programming for these projects is taking place.

Engineering Division

Work on improving the water and sanitation facilities in the NWT was carried out in 27 different communities. The division undertakes predesign studies in accordance with local government guidelines to reach the most appropriate solution to a community's water and sanitation needs. Such studies were carried out in 10 communities with implementation of the recommendations slated for 1979.

As part of a five-year program to upgrade bulk fuel storage facilities in the NWT, major new facilities were completed in 1978 at Baker Lake, Rankin Inlet, Eskimo Point, Fort McPherson, Sachs Harbour, Pond Inlet, Fort Good Hope, Igloodik, Coppermine and Hall Beach. The total capital construction cost was approximately \$4 000 000 in 1978.

Problematic gravel pad foundations through the area above the treeline were replaced on a large scale for the first time by steel piles. A special drilling machine, suitable for northern use, was introduced. The machine, and accompanying air compressors, are transportable in a DC3 and can be used in almost all communities. During 1978, foundations for schools, parking garages, tradeshops, houses, apartments, and a store were carried out by the new piping method.

Highways Division

Road reconstruction projects included widening and strengthening of the roadbed along the Hay River Highway, between Enterprise and Hay River, in preparation for paving. The same type of work was undertaken on a 33 km portion of the Fort Smith Highway leading to Pine Point from Hay River. Along this same route approximately 35 km of road surface was stabilized using bitumen and gravel chips.

Operations within the division include operation of three ferries. A vessel was purchased from Arctic Transportation Limited and renamed Linus Cardinal. This vessel, bought with federal funds, will eventually be used as a standby ferry. However, until new ferries are built and available for the Dempster Highway on the Peel and Mackenzie Rivers, it will join the M.V. McQuesten for temporary services on this route. Continued success with contractual operation of the M.V. Johnny Berens on the Liard River Highway crossing lead to retendering this operation in 1978. The operation of the M.V. Merv Hardie at the Mackenzie River crossing on the Yellowknife Highway was contracted out too and reduced costs.

Accommodation Services Division

The new Accommodation Services Division has reorganized the filing and record system for leases and buildings inventory and undertaken establishment of a comprehensive financial records system.

The Executive Offices

The year 1978 marked the beginning of the second decade of resident government in the Northwest Territories. In the earlier part of the year there was review and examination of accomplishments. In the latter part of the year priorities, thrusts and directions for the 1980's were established.

The process of devolution to the regions and the communities is progressing in an orderly fashion. Progress in devolution was made in 1978 in all areas of government. New hamlets were formed at Hall Beach and Clyde River and the first community educational society was formed at Eskimo Point. Frobisher Bay is taking over its social services. The hunters' and trappers' associations of Frobisher Bay and Fort Simpson are settling up country-food exchanges and the Fort Resolution sawmill is operating under local control.

On the regional level, the Baffin Regional Council is gaining stature and influence. Some difficulties are being experienced, particularly in the smaller settlements, in coordinating committees, but solutions are being found.

Land Claims

With the increasing activity in land claims matters in the Northwest Territories, particularly with the release in July, 1978, of the joint COPE-Federal Government position paper on the Inuvialuit land rights claim, the Government of the Northwest Territories moved to create an NWT land claims secretariat. It is the focal point for the coordination of the government's participation in the land claims process.

The land claims secretariat forms part of the Executive Offices. It reviews and analyses land claims activities affecting the Northwest Territories and provides policy advice to the Executive Committee on all land claims matters. It arranges or provides for territorial government representation at all land claims negotiating sessions involving claims within the NWT. It also provides information on all aspects of land claims matters to the senior management of the territorial government, and is in contact with the federal and provincial governments.

Liquor Control System and Liquor Licensing Board

The Liquor Control System is responsible for the purchase, distribution and sale of alcoholic beverages in the Northwest Territories through liquor stores, agencies, and the various licensed outlets. The system provides administrative support to the Liquor Licensing Board.

The Liquor Licensing Board dealt with contraventions of the Liquor Ordinance and regulations. Several suspensions were imposed.

Use of local option plebiscites has increased. As of September 1, 1978, prohibition was in force in seven communities while restriction was exercised at three others.

Territorial Audit Bureau

Responsibility for the Audit Bureau was transferred from Planning and Program Evaluation to the commissioner. The assistant commissioner is chairman of the audit committee.

The role of the audit committee was expanded to include reviews of problems. The responsible departments are required to develop plans for corrective action and report to the committee.

The bureau is working towards an expanded internal audit function by reducing external audits. Considerable time was spent assisting public accounting firms in audits of both hamlets and housing associations.

The workload in areas of territorial-federal agreements has expanded with additional responsibility to Health and Economic Development. Two new hospitals were added, as were many projects under the Department of Regional Economic Expansion. At the same time, the audit reporting system was adapted to place responsibility for audit with the regional staff.

Workers' Compensation Board

The Workers' Compensation Board of the Northwest Territories administers the Workers' Compensation Ordinance and adjudicates all matters arising under that ordinance. It is an autonomous body, separate by statute from the territorial government, but responsible directly to the commissioner and the Legislative Assembly. One of the final steps in establishing this autonomy was taken in March, 1978, with transfer of trust funds from the government's consolidated reserve to the board's accident fund.

In 1978, the yearly maximum remuneration for workers was increased from \$14 500 to \$16 800. Accordingly benefits have been increased: temporary total disability benefits went from \$906.25 per month to \$1 050 per month; widows benefits from \$398.75 per month to \$462.00 per month; dependent children's benefits from \$90.62 per month to \$105 per month.

During the calendar year 1978, 2 355 new claims were processed. The total number of employers registered increased to 2 150 active plus 928 inactive for a total of 3 078 employers.

The pension increase of 1977 was followed by a further increase of eight per cent for 1978. This was awarded to disabled workers with permanent disabilities and to the dependents of workers deceased as a result of injuries suffered from accidents prior to 1977.

NWT Housing Corporation

The Northwest Territories Housing Corporation, with its staff of 88 employees, 38 of whom are working in the six different offices, administers social housing programs to provide adequate standard housing to all residents of the Northwest Territories. It becomes involved in community design and encourages home-ownership.

The major challenge facing the NWT Housing Corporation is to meet widespread aspirations for home ownership. Limited incomes, high operating costs, and attractive rental programs makes ownership difficult. Overcoming these factors will take the support of other government departments, the private sector and residents.

During 1978, the corporation's program constructed 154 units under 22 contracts. Ninety-four of them were single family prefabricated units. Seventy-nine per cent of the erection contracts for these prefabricated units was awarded to northern contractors.

Under the direction of the corporation district offices, 45 housing associations-authorities were responsible for the operation, administration and maintenance of 3 420 units of social housing.

Prior to 1978 it was recognized that a move towards higher density construction was necessary to improve building quality without increasing costs. This year 25 multiple family dwellings and 24 single persons' units were constructed in Frobisher Bay and 18 duplex units in Pangnirtung.

In 1978, a pilot training project, in cooperation with Canada Manpower, started in Pangnirtung. Done at the request of the community, it included one stick-built duplex two family dwelling. This project involved on-the-job training for six trainees, all residents of Pangnirtung, who built these units entirely except for sub-trade portions such as plumbing and heating. It is planned to conduct similar programs in other communities.

In April, 1978, a new rental scale, implemented throughout the territories, placed maximum rent on public housing in line with government staff housing. This new rental scale included all sources of income in "gross income" and divided the NWT into five different cost zones.

The rural and remote housing program continued to be popular, allowing 20 families in five communities to become home owners. Under this subsidy program, monthly mortgage payments are limited to 25 per cent of adjusted family income.

The small settlement home assistant grant was provided to 20 families in three communities. This program provides grants of up to \$10 000 to qualifying applicants in designated communities to build homes from locally-harvested materials. The grant, which includes \$2 500 for transportation, provides the manufactured components such as doors and windows.

The board approved the small settlement shelter grant program which applies to designated communities above the tree-line. Under this program, a maximum grant of \$10 000 provides a basic shelter package and transportation. Two families in Bay Chimo took advantage of this program in 1978.

The interim financing program, created in 1977 to assist members of registered building cooperatives, was well received. In 1978, a total of 16 families used this program as compared to 10 in 1977.

In 1978 a senior citizens' home with personal care units was completed in Aklavik. It is the first of its kind in the NWT. In June, the Sunset Garden Chalet, a senior citizens' project in Fort Smith, was opened.

The Western Arctic and Mackenzie Housing Conference was held in Hay River in December. This conference brought 72 delegates together from 18 communities in the districts of Hay River, Yellowknife and Inuvik to discuss and develop consistent guidelines and procedures for housing programs.

In the fall of 1978, progress was made in formation of a comprehensive strategy for the design and construction of northern housing. Phase 1 of this program will take place over a period of six months. The participants in the task force involved are the Housing Corporation, Central Mortgage and Housing Corporation and the Government of the Northwest Territories. ■

Government of the Yukon Territory

GYT



The largest sub-species of moose in North America inhabits beautiful Kluane National Park and the adjoining Kluane Game Sanctuary in the extreme southwestern corner of the territory. Yukon Government Photo.

Responsibilities

The government administers the Yukon Territory in accordance with the Yukon Act, Yukon Ordinances and applicable federal laws.

Yukon Legislative Assembly

Responsibilities

The Yukon Legislative Assembly exercises legislative authority as designated by the Yukon Act.

Office of the Clerk of the Legislative Assembly

Responsibilities

The Clerk of Assembly provides support to the Legislative Assembly, the Standing and Special Committees of the House, the Yukon branch of the Commonwealth Parliamentary Association and the Elections Board. As deputy head of the Clerk's office, the clerk looks after all administrative matters affecting that office.

Review 1978-79

The spring session of the 23rd wholly-elected Legislature convened March 2, 1978, adjourned April 27 until June 26 and prorogued June 29 for a total of 25 sitting days.

Nineteen public bills (including the Special Rural Development Agreement Ordinance, the Pioneer Utility Grant Ordinance, and an Ordinance to Amend the Elections Ordinance) were passed. Three private members' public bills (an Ordinance to Amend the Mining Safety Ordinance, an Ordinance Respecting the Council of the Yukon Territory, and an Executive Council Ordinance) were passed although not granted assent.

A delegation of MLA's from Alberta visited the Assembly in April for discussion.

On November 20, 1978, the electorate returned 16 members, an increase of four, to the Yukon Legislative Assembly. Eleven Progressive Conservatives, two Liberals, one New Democrat and two independents were elected in the first territorial election to be run along traditional Canadian political party lines. The historic election was held under Yukon's own Elections Ordinance, administered by a three-person Elections Board.

The new Assembly opened December 13, 1978, and prorogued December 14. During the session, a Speaker was elected, the new Executive Committee was appointed, and a Rules, Elections, and Privileges Committee and Members' Services Board were struck.

An important constitutional step was made following the first session of the 24th wholly-elected Assembly. The majority party leader now determines the size and membership of the Executive Committee, except with regard to the two appointed members.

The second session opened March 6, 1979. Several bills were introduced including a Northern Natural Gas Pipeline Agreement Ordinance, an Ordinance to Amend the Dental Profession Ordinance, and a Medical Profession Ordinance, which received second reading only.

The Rules, Elections and Privileges Committee revised the Standing Orders of the House to adapt to the government-opposition system. The new rules were adopted March 7, 1979.

The House adjourned April 4, 1979, after 18 sitting days.

Executive Committee Office

Responsibilities

The Executive Committee Office provides all administrative and secretariat services for the Executive Committee, the Sub-Committees on Finance and Legislation and the Permanent Advisory Committees. It also provides administrative and executive support services to the office of the commissioner and informational support reviews concerning changes in legislation and internal policy guidelines to all the Yukon Territorial Government Departments. Financial and personal management support services are provided to the Intergovernmental Affairs Office, the Land Claims Secretariat, the Native Advisor and the Internal Auditor.

Review 1978-79

The year 1978 was an historic one for the Yukon. In the November general election candidates ran for the first time on political party lines. It was also the first Territorial Election conducted by the Yukon Government. The Yukon Progressive Conservative Party won 11 of the 16 seats in the Legislative Assembly and formed the first majority government. In December, four members of the majority party were appointed to the Executive Committee: the member for Whitehorse-Riverdale, Chris Pearson; the member for Porter Creek East, Dan Lang; the member for Tatchun, Howard Tracey; and the member for Old Crow, Grafton Njootli. The elected representation on Executive Committee was increased to five in February, 1979, with the appointment of the member for Porter Creek West, Doug Graham. At the end of the fiscal year the portfolio responsibilities of the Executive Committee Members were:

Commissioner Christensen: Department of Finance, Public Service Commission, Executive Committee Office.

Deputy Commissioner Doug Bell: Government Services, Intergovernmental Affairs, Liquor Corporation, Workers' Compensation Board.

Government Leader Chris Pearson: Land Claims, Pipeline.

Doug Graham: Education, Justice, Information Services.

Grafton Njootli: Health and Human Resources.

Dan Lang: Highways and Public Works, Municipal and Community Affairs, Yukon Housing Corporation.

Howard Tracey: Tourism and Economic Development, Renewable Resources, Consumer and Corporate Affairs.

In January, 1979, Mrs. Ione Christensen, the former mayor of Whitehorse, became the 13th commissioner of the Yukon. The inaugural ceremonies, held in the Supreme Court, were attended by four former Commissioners, the Honourable Hugh Faulkner, Minister of Indian Affairs and Northern Development. The Minister redefined the role of commissioner, giving more responsibility to the elected members of the Executive Committee by requiring the commissioner to accept their recommendations on a broad range of topics. The selection and number of the elected members on the Executive Committee now rests with the majority government leader.

Plans for 1979-80

The Executive Committee will visit most Yukon communities so the members can become familiar with the concerns and aspirations of Yukon residents.

A restructuring of Sub-Committees and Permanent Advisory Committees will permit streamlining of committee work and facilitate review of government proposals.

Public Service Commission

Responsibilities

The commission recruits and certifies applicants for positions in the public service. It looks after job evaluations, pay administration, contract interpretation and administration, collective bargaining, staff control, organizational reviews and employee appraisals, safety, training, and fringe benefit programs. The commission administers the Public Service Commission Ordinance, the Public Service Staff Relations Ordinance, the Territorial Employees' Superannuation Ordinance and the pursuant Regulations.

Review 1978-79

Recruitment and Selection

A total of 1 739 permanent and casual appointments were made during the fiscal year. This included 425 civil service permanent appointments, 68 teacher and three kindergarten instructor appointments. Of the civil servant appointments, 88 per cent were Yukon residents. The average turn-over of employees was 28 per cent. Actual movement, which includes appointments, promotions and transfers, represented 38 per cent, excluding teachers and kindergarten instructors. Statistics compiled over the past two years demonstrate that employees hired from outside the Yukon have a considerably lower turn-over rate than employees hired within Yukon.

In the latter part of the fiscal year, financial restraint measures affected the recruitment to vacant positions. These restraint measures resulted in a slow-down of recruitment activities for the period of December to the end of the fiscal year.

Job Evaluation and Pay Administration

Approximately 276 position transactions and 50 classification and pay plan amendments were processed during the year. The management-prepared position description was revised and updated to reflect more accurately the information required by classification officers prior to classification decisions. In addition, a guide to the management-prepared position description was developed and distributed. The guide includes an analysis of the position description format, identifies common classification factors utilized in the classification process and lists classification definitions. Class series reviews for library and record clerks and work for assessors were completed. A class series review for all administrative officer and related positions of employment began in the latter part of the year. The Classification Division conducted an organization and classification re-survey of the complete Supply and Services Branch. The survey started in the latter part of October and was completed by the end of the fiscal year.

A job description seminar was developed to provide operating departments and managers with a greater understanding of the classification process, and a seminar dealing with classification factors was developed. Both seminars were introduced in the latter part of the year and courses will continue into the fall of next year.

The Classification Division's initial decision was upheld in the Government's first Classification Appeal, heard in the early part of the fiscal year by the Classification Appeal Board. The employer is now preparing information on the classification appeal process.

Staff Training and Development

The Public Service Commission assisted in providing training, seminars, workshops, and courses for approximately 450 territorial employees. There were courses and seminars on human behaviour, assertiveness for employees, electrical upgrading, audio-visual aides, bookkeeping, interviewing and supervisory skills, climbing safety, performance evaluation, air brake mechanics.

In the latter part of the year there was discussion about the feasibility of government training for all Yukon people. This is in its embryo stage and considerable thought must be given before an overall plan can be adopted. However it is hoped that departments will receive more dollars for on-the-job training and career development.

During the year, the interdepartmental training committee, established to coordinate all Federal-Territorial training activities in the Yukon, held several meetings to assist in training of civil servants.

Liaison with DIAND on-the-job training representatives increased during the year, resulting in placement of trainees in various government branches and divisions. Liaison also continued with Northern Careers' representative in Yukon and with the Yukon Government's Rehabilitation Branch to place potential trainees.

Dialogue Canada courses in French training continued through the year and 34 Yukon Government employees participated on a volunteer basis. These courses are also offered to federal civil servants and community residents in Whitehorse.

Staff Relations

The commission and the Public Service Alliance of Canada reached a two-year collective agreement with the assistance of a conciliation board report. The Agreement, effective April 1, 1978, to March 31, 1980, was signed August 22.

On November 21, 1978, the Yukon Teachers' Association signed a two-year collective agreement effective September 1, 1978, to August 31, 1980.

A portion of the first year of the two-year PSAC agreement fell under the jurisdiction of the Anti-Inflation Act and pursuant Regulations while the Teachers' Association agreement did not.

Safety and Security

During the year a number of break-ins involving government property were investigated and guidelines to departments on physical security were issued.

First aid courses continued to be offered to employees as part of the government's overall safety program. A large number of female employees in various operating departments took this training. Safety inspections of all work establishments were conducted on a regular basis and work on upgrading the government's ability to meet potential emergencies

under the Emergency Measures Organization continued. Joint union-management safety committee meetings were held on a regular basis and recommendations were investigated and implemented where feasible.

Ordinance Review

In August, 1978, the Public Service Commission reviewed the Public Service Commission Ordinance to determine its ability to meet departmental needs. The review involved all government departments and branches, deputy heads and departmental personnel officers. A report was compiled and forwarded to the Permanent Advisory Committee on Internal Management at the year-end.

Performance Evaluation Review

A special joint Union-Management Committee completed its review of the performance evaluation process within government. Following the review, the committee recommended a revision to the existing Employee Performance Evaluation form, the adoption of several forms related to specific kinds of occupations and the introduction of a performance evaluation guideline for employees, supervisors and managers. Performance evaluation seminars were conducted for supervisors and managers. The committee expressed hope that the revised Employee Performance Evaluation process will assist in upgrading the overall performance of employees and lead to the identification of needed training and career development patterns.

Special Benefit Reports

A special leave report analysis conducted in the fiscal year indicates that sick leave used per employee has dropped from an average of .545 days per month in 1976 to .492 days in 1978. At the same time, special leave use rose from .061 days per month in 1976 to .088 in 1978. The latter can be explained by the increased ability of employees to use special leave negotiated in successive collective agreements. During the same time, leave without pay decreased from an average of .292 days per employee per month in 1976 to .235 days per employee per month in 1978. This represents approximately a 20 per cent reduction. The commission suggests that leave without pay reduced due to the expansion of vacation leave benefits.

Plans for 1979-80

The Public Service Commission, over the next 12 months, will attempt to increase the number of pre-retirement seminars and, for the first time, hold an early-retirement seminar. Retirement seminars help employees to better understand what retirement means and how to manage their financial and other resources.

The Public Service Commission will also be conducting job description writing courses for management and supervisory people. This information has been requested by departments to facilitate a better understanding of the classification system within this government.

Courses in human relations, supervisory skills, first aid, financial management, report writing and in specific technical areas will be conducted also.

The Public Service Commission intends to review the various policies under its authority so they can be revised in a comprehensive format easier to peruse by other government departments.

Negotiations with the Public Service Alliance of Canada are expected to commence during the latter part of the fiscal year while negotiations with the Yukon Teachers' Association will commence shortly after.

Continued, increased emphasis will be placed on on-the-job training programs for all Yukoners.

Directorate of Intergovernmental Affairs

Responsibilities

This directorate provides support services to the commissioner and deputy commissioner in the coordination of federal and territorial programs and intergovernmental relations. The directorate also provides Yukon representation on committees of the (federal) Advisory Committee on Northern Development (ACND) and its various working groups. Responsibilities also include administration of the Yukon's Federal Interdepartmental Coordinating Committee (FICC) and secretariat services to the FICC's General Committee, Steering Committee and standing sub-committees. The directorate performs all protocol functions for the Yukon Government and is the focal point for coordination of official visits of federal ministers, representatives of foreign embassies and other dignitaries.

Review 1978-79

The complexities and impact of northern development policy has continued to place a heavy demand upon the Yukon Government and has created a need for greater liaison and communication with the federal government.

The directorate participation in ACND required representation on the following committees: General, Transportation, Science and Technology, Northern Communications, Employment of Native Northerners, Roads and Federal-Territorial Economic Planning.

During the year, the directorate continued to work closely on plans for the Scientific Resource Centre being proposed for Whitehorse by the Department of Indian Affairs and Northern Development. The centre will provide specialized laboratory facilities to serve the research and scientific needs of both the federal and territorial governments. The Scientific Resource Centre will also provide a base for transient scientists involved in northern research.

During the year, the directorate continued to foster and maintain positive and constructive relationships with other governments, particularly those which border on Yukon. The existing social and economic relationships and the many areas of interdependence make communication and liaison essential.

Intergovernmental meetings were held during the year with various federal government agencies and other governments. A long-standing problem involving jurisdiction over fuel tax collection in certain segments of the Alaska Highway and the Haines Road was resolved as a result of a meeting with officials of the British Columbia Government. Other jurisdictional problems involving Yukon and British Columbia were identified and measures taken. Intergovernmental meetings were also held during the year with the governments of Alaska, Alberta and the Northwest Territories.

The Federal Interdepartmental Coordinating Committee (FICC), a Standing Committee of the Advisory Committee on Northern Development, held quarterly and a number of special meetings during the year. The commissioner is chairman and membership is composed of the senior representative in the Yukon of each federal and crown agency, as well as a senior official of the Yukon Government. During the year FICC coordinated the activities of all federal government departments and agencies in the Yukon and established interdepartmental communication and liaison.

A permanent subcommittee of FICC was established to deal with the impact of the proposed Alaska Gas Pipeline on ongoing departmental programs and activities. Two areas of particular concern have been identified: personnel problems and the level of air facilities in the pipeline corridor. Discussions with the Public Service Commission, Treasury Board and Transport Canada respectively are going on. The FICC involvement in the total package of Northern Federal Employee Benefits has continued and a submission was made to Treasury Board in May in connection with the triennial review of Isolated Post Regulations.

The FICC Pipeline Subcommittee has monitored developments in the project and will monitor and do surveillance of pipeline activity impacts on departmental programs. The subcommittee has continued to review specific departmental capital programs in the pipeline corridor.

On the recommendation of FICC, the five-year summary of Government Capital Expenditures, prepared by DIAND in 1978, is being updated with 1979 departmental programs and a special working group has been constituted to analyse and review the data tabled. The working group includes FICC, DIAND, Yukon Government and Treasury Board.

Briefing seminars were organized by FICC for both managerial and staff personnel with Treasury Board to clarify application of the revised Isolated Post Regulations. In addition, FICC will designate a representative to the Northern Housing Requirements Committee, the advisory body to Treasury Board on all matters concerning crown-owned living accommodation in the North.

Public meetings have been held by FICC in various communities on an annual basis to permit individuals to raise specific matters of concern directly with the government department concerned. Such public meetings will now be coincident with three out of four quarterly meetings, instead of once quarterly.

Membership in FICC expanded during the year to include the Public Service Commission, Labour Canada, the Northern Pipeline Agency and the Department of Regional Economic Expansion.

Major protocol activities in which the directorate has been involved during the year included the annual northern tour of foreign ambassadors, visits of federal and provincial cabinet ministers, United States embassy officials, consuls-general of various countries. The directorate also coordinated a meeting of the interprovincial ministers of health.



In recent years, cross-country skiing has become extremely popular in Yukon, both for competitive racers and recreational ski tourists. Whitehorse has hosted numerous successful regional races and developed a system of trails within minutes of the downtown area.

Plans for 1979-80

The directorate will continue to coordinate federal and territorial government activities in the Yukon. Intergovernmental relations with neighbouring jurisdictions will be maintained and strengthened.

Land Claims Secretariat

Responsibilities

The Land Claims Secretariat is a research unit which develops Yukon government positions concerning settlement of Yukon Indian Land Claims and the constitutional development of Yukon.

Review 1978-79

From January 31, 1978, to February 12, 1979, land claims discussions were adjourned to give representatives of the Yukon Indian people time to develop a comprehensive claims position. During this period the Secretariat devoted its attention to constitutional research elaborating on an earlier study, entitled *Some Constitutional Aspects of the Government of the Yukon Territory*.

On February 6, Willard Phelps, former member of the Yukon legislature and member of the Alaska Highway Pipeline Inquiry, was appointed the Yukon government's land claims negotiator. Responsibility for land claims was transferred from the commissioner to the Government Leader effective February 19. A Memorandum of Understanding on the Process for Negotiating Native Claims in the Yukon Territory was signed by the Minister of Indian Affairs and Northern Development on February 19 and by the Yukon Commissioner February 22.

Plans for 1979-80

Further work will be undertaken by the Secretariat to place the settlement of the land claims within the overall constitutional context of Yukon's development.

Pipeline Coordinator's Office

Responsibilities

The Pipeline Coordinator's Office was established in 1976 to gather and assess material relative to the Alaska Highway Natural Gas Pipeline and to perform a liaison and monitoring function within the Yukon Government. The office is also responsible for coordination of Yukon Government activity relative to the pipeline and has been involved in policy development.

Review 1978-79

Throughout the year the office maintained close contact with the Northern Pipeline Agency, other federal government agencies involved in pipeline planning, and the proponent of the Alaska Highway Pipeline Project to ensure that the Yukon Government's views and concerns were represented. The Pipeline Coordinator was appointed to the Federal-Provincial-Territorial Consultative Council, established pursuant to the Northern Pipeline Act to examine and comment on pipeline planning.

One of the office's major undertakings during the year was the coordination, analysis, and the subsequent drafting of proposed changes to the Socio-Economic Terms and Conditions issued by the Northern Pipeline Agency. Similar work was undertaken with regard to the Environmental Terms and Conditions and to the Environmental Impact Statement. This work involved soliciting comments and opinions from all Yukon Government agencies, analyzing the responses and preparing comprehensive submissions.

During 1978-79 the office developed a preliminary mitigation measures strategy for the Yukon Government. This involved identifying potential pipeline related impacts on government agencies and programs and developing methods of dealing with those impacts.

The office negotiated and prepared the Canada-Yukon agreement giving Yukon approval to the Canada-United States accord and insuring Yukon of a bargaining position in future pipeline related negotiations.

Several studies related to pipeline activity were also prepared or commissioned by the office. Among them was a paper on the supply of pipeline gas to Yukon communities and a study, due for completion in 1979, on pipeline taxation and heritage fund.

Early in 1979 the office was involved with the Yukon Public Hearings conducted into the Socio-Economic and Environmental Terms and Conditions.

Plans for 1979-80

As of April 1, 1979, the Pipeline Coordinator's Office becomes the Pipeline Branch. The new branch will be staffed by a director, an environmental assessment officer, a financial-taxation officer, a lands-regulatory officer, a socio economic-community affairs officer, clerical personnel and contract research assistants. The staff increase allows the branch to undertake additional responsibilities.

Over the course of the year, the branch will review its pipeline taxation and heritage fund data from the standpoint of the introduction of legislation and conduct more intensive investigations of government mitigative measures. It will develop techniques and procedures for socio-economic and environmental impact monitoring programs and be involved in the review and assessment of project plans submitted by the proponent. The branch will draft legislation regarding direct cost recoveries and loans needed to offset impact related costs.

Finally, the branch will be closely involved in the assessment of applications and plans for construction of the proposed Skagway-midwest oil pipeline and the proposed Dempster lateral pipeline.

Department of Finance

Responsibilities

The Department of Finance manages the Yukon Consolidated Revenue Fund; keeps official accounting and financial records of the Government of Yukon; processes and pays suppliers' accounts; processes and pays government payroll; prepares and distributes Territorial Accounts and other periodic financial statements and financial information; collects taxes and revenues; coordinates budgets, program forecasts, main estimates and financial management and control; provides assistance and direction in all government departments and agencies financial matters; provides data processing and computer services; provides supply and services functions including central purchasing, warehousing and distribution, asset control, transportation, Queens Printer services and mail.

The department provides financial advice and assistance to the Executive Committee and is responsible for the presentation of the main estimates, territorial accounts and other periodic financial information.

In addition, the department provides a control and monitoring function of the financial performance of departmental operations and is involved in formulating financial policies, procedures and control and providing overall guidance and leadership in all financial areas of the government.

Review 1978-79

During 1978-79, organizational changes in the department included the addition of an assistant treasurer and the formation of a Financial Planning and Systems Development Branch. These changes were necessary because of added functions, responsibilities and overall workload and to further improve the level and quality of service to the public and user departments.

Throughout the year the Department of Finance provided all departments with direction and guidance in financial matters and made more financial information available to the Executive Committee.

The most significant undertaking during 1978-79 was action upon recommendations made by the Auditor General in his Financial Management and Control Study report, tabled in the Legislative Assembly in April, 1978.

With the approval and full backing of the Executive Committee a comprehensive work plan was developed to respond to the recommendations of the FMCS report and other needs.

A Financial Management Systems Development Working Group and Steering Committee were established to develop new accounting and financial systems, financial manuals and other matters necessary to improve the financial management and control within the Government of Yukon.

In addition, the department was heavily involved in developing and coordinating an accelerated capital program for the government, financial matters relating to the Alaska Highway pipeline, initial steps in establishment of Yukon income tax, examination and revision of Yukon electric rate equalization, preparation for a possible transfer of health matters from the federal government, and establishment of an internal audit program.

Financial Statistics

	1978-79 Projected	1977-78 Actual
<i>Operation and Maintenance</i>		
Revenue, Recoveries and Grants	\$73 075 000	\$66 498 000
<i>Operation and Maintenance</i>		
Expenditures	72 479 000	62 163 000
<i>Capital and Loan Expenditures</i>	31 300 000	21 277 000

Plans for 1979-80

Further reorganization will separate Supply and Services and Data Systems and Computer Services Branches from the Department of Finance and create a new Department of Government Services. This will allow the Department of Finance to devote more time to strictly financial matters.

Undertakings during 1979-80 will include continued work on the Financial Management Systems development presently under way. There will be further improvements in accounting and financial administration and control, a review of financial planning and budgeting, examination of zero base budgeting, examination and implementation of program evaluation, development of the final stages of legislation and collection agreement for Yukon income tax, implementation of a revised Yukon electric rate equalization program, examination of the present insurance program, examination of the Yukon Home Owners' Grant program for improved administration, review of the Small Business Loans program, development and implementation of improved working capital information, improvement of financial presentation and information to departments and the Executive Committee.

In addition, the treasurer will be involved in the implementation of the internal audit program.

Department of Education

Responsibilities

The Department of Education has four areas of responsibility: elementary and secondary education, adult and continuing education, manpower planning, and recreation services.

Review 1978-79

Elementary - Secondary Education

In September, 1978, 5 222 students enrolled in kindergarten to grade 12 compared to 5 391 in 1977. In June, 1978, with the closure of Cassiar Asbestos Mine at Clinton Creek, the Robert Henderson school closed. The new gymnasium at Selkirk Street Elementary School in Whitehorse was completed. School additions and renovations began in Watson Lake and Haines Junction. Improvements were made to several school grounds as part of the five-year program of up-grading.

The Yukon Teacher education program graduated its first class. A large percentage of the graduates found employment in Yukon. The three-year program has 15 students going into its second year. The major undertaking of the year was the introduction of a new elementary school science program. A major feature of implementation was in-services provided to teachers. Several Yukon teachers were trained by the department staff and one author of the textbook series. These teachers conducted sessions in each school and community.

The French program offered in grades 5-12 has undergone revision. The first phase of an evaluation study of elementary French was completed and the second phase begun so that by June, 1980, the total program can be reviewed. Teacher in-service sessions and workshops were sponsored and a number of French teachers received bursaries for summer immersion courses. Yukon post-secondary students were participants in the federal summer bursary and monitor programs funded through Council of Ministers of Education Canada (CMEC), which also provided two full-time francophone monitors to assist in the territory schools.

The French Language Centre served as a resource centre for teachers and students and maintained a varied program of both day and evening adult non-credit extension French classes. Extension French classes were offered in rural communities.

Amendments to the Student's Financial Assistance Ordinance were approved by the Yukon Legislative Assembly during 1978 Spring Session. Qualifying students receive a maximum of \$10 000 in grants over five years. Grants during the year totalling \$345 688 were provided to 226 Yukon students attending post-secondary institutions outside Yukon. Eighty students received \$122 540 through the Canada Student Loan Program. Off campus university courses from the University of Alberta were once again offered, expanding beyond Whitehorse to Faro.

During the year, three major educational concerns received preliminary attention. In the fall of 1978, Mrs. Frances Fleming, formerly with the Ministry of Education in British Columbia, was commissioned to prepare a report on special education services. During the coming year Mrs. Fleming's report will form the basis for establishing direction and policies. A second concern centres around the kinds of programs that will meet the needs of students who normally enter the work force prior to or directly after high school graduation. A third area of concern relates to the delivery of secondary school programs to rural students.

Adult and Continuing Education

During 1978-79, the Vocational and Apprenticeship Training Branch became the Adult and Continuing Education Branch to reflect the growing emphasis on continuing education. Responsibilities carried over from the Training Branch include pre-employment training, basic education up-grading, technical up-grading, apprenticeship trades qualifications and certification, and industrial training. In addition, all adult and post-secondary education will become the branch responsibility.



Dawson City today. Population is now about 800 as compared to over 35 000 during the gold rush. Dawson City is now an historian's delight as remnants of the gold rush still linger in the buildings and valleys. Government of Yukon Photo.

In October, 1978, a University of Alberta research team was authorized to conduct a study relating to continuing education programs in Yukon. This study will identify the wants and needs for continuing education opportunities in Yukon and investigate alternate systems and organizational structures to have it delivered, governed, and coordinated. A reference committee of Yukon residents was established to guide the team. The final report is due in September, 1979.

The Yukon Vocational and Technical Training Centre offered full-time pre-employment courses of five and ten months duration in basic education, including basic training for skills development and community basic education, and night school courses.

Pre-Employment Courses

Approximately 250 students took the regular full-time pre-employment courses this year. In addition to the variety of courses previously offered, the Yukon Vocational and Technical Training Centre started a five-month plumbing course in Whitehorse. The course began in January, 1979, with 13 students enrolled. All of the graduates are expected to find employment in the Yukon.

The existing instructional facilities at Yukon Vocational and Technical Training Centre are taxed to capacity, which necessitates the rental of facilities in other areas of Whitehorse.

Community Basic Education

Approximately 100 students enrolled in the Community Basic Education Program offered in ten communities throughout Yukon.

An external evaluator was engaged to examine the Community Basic Education Program. Several changes will be implemented for September, 1979, as the result of this evaluation.

Night School

Greater emphasis is being placed on night school courses. During the school year, 781 students enrolled in 57 night school courses. In Whitehorse, a total of 219 students attended 15 night school courses during the 1978 full term and 424 students attended 31 courses during the 1979 spring term.

A total of 138 students enrolled in 11 night school courses in Elsa, Carmacks, Dawson City, Faro, Haines Junction, Ross River, and Watson Lake.

Apprenticeship and Industrial Training

In 1978-79, 136 people wrote Yukon Tradesman Qualification Examinations and 23 wrote Interprovincial Standards Examinations.

A total of 72 qualified for Yukon Certificates and 19 for the Interprovincial Standards Red Seal Certificates.

Nineteen apprentices completed their apprenticeship program and received a Yukon Tradesman Qualification Certificate. Nineteen qualified for the Interprovincial Red Seal. There are 127 apprentices currently under contract.

As of March 31, 1979, 592 Tradesman Qualification Certificates had been issued in 10 trades and 74 have completed apprenticeships. There were 195 trainees registered under the Canada Manpower Industrial Training Program from September 1, 1978, to March 31, 1979.

Manpower Planning

The Manpower Planning Branch does long-range research, program and policy planning in employment training and areas related to labour force development and manpower concerns. The branch provides services to various federal-territorial, industry, labour and government committees.

The branch continued to negotiate the establishment of local employment provisions for the Alaska Highway and Shaktak Projects.

The Yukon Summer Student Career Employment Program, initiated last year as a pilot project, was sponsored again this year. The program offers Yukon university students career related summer employment opportunities in Yukon Government departments and branches.

A paper analyzing the job creation programs in Yukon was completed.

In addition, the branch carried out a number of projects in cooperation with the Adult Training Branch and other Yukon Government departments.

A Training Interest Inventory was conducted throughout Yukon and results compiled in conjunction with the Canada Employment and Immigration Commission.

A Women's Bureau was established within the branch with the objective to expand and consolidate government efforts to improve the status of women in Yukon. The bureau will assess territorial and provincial legislation, policy and programs to compare the status of women in Yukon with other areas in Canada and recommend revisions or new Yukon policy. It is a focal point and liaison body for government departments, local women's groups, provincial, federal, and territorial departments and will develop and assess social and economic indicators. The bureau will coordinate input into the development of a Yukon Plan of Action for Women a resource centre and information dispersal program regarding the status of women in Yukon and work actively with government, local employers and unions to encourage training and equal opportunities for female employees.

Recreation

Recreation Assistance Program (RAP)

In keeping with the Recreation Development Ordinance, most Yukon communities received RAP funds on a cost-share basis. Grant money was used to help with costs of travel for athletic teams, to finance arts and cultural workshops, clinics and courses, to rent films and facilities, and to administer a variety of other children and adult community programs. Fundings was provided to Old Crow, Beaver Creek, Destruction Bay, Haines Junction, Teslin, Watson Lake, Carcross, Whitehorse, Carmacks, Pelly Crossing, Faro, Elsa-Mayo, and Dawson.

Canada Games

The Recreation Branch coordinated the Yukon contingent to the Canada Winter Games February 12-24 in Brandon, Manitoba. In addition to winning two bronze medals and finishing 11th overall, Yukon athletes won the coveted Centennial Cup, emblematic of the most improved province or territory at the Games.

Performing Artist Tours

Through the combined efforts of the Recreation Branch, Yukon Arts Council, and local community recreation boards, visiting artists performed in each major Yukon community, thus making it the most successful season to date.

National Coaching Certification Program

The Recreation Branch offered Level 1 Theory courses in Yukon communities and actively supported technical coaching programs administered by territorial sport governing bodies. The Yukon's coaching coordinator was appointed to the National Coaching Certification Council as a representative for Yukon, NWT, and B.C.

Portable Swimming Pool Program

As in previous years, the Recreation Branch administered a summer swimming pool program in Clinton Creek, Dawson, Beaver Creek, Carmacks, Carcross, Teslin and Watson Lake.

Yukon Recreation Advisory Committee

The Yukon Recreation Advisory Committee (YRAC) financially assisted a variety of sport and cultural associations over the past year.

Special Projects

The Recreation Branch directly coordinated an arts, crafts, and cultural display exhibited at the Commonwealth Games in Edmonton during August, 1978. The first Recreation Board Members' Seminar in Whitehorse was held in September, 1978. Delegates from all communities participating in Recreation Assistance Programs attended workshop sessions. The keynote speaker was Dr. Ted Storey, former chairman of the Department of Recreation, University of Ottawa.

Plans for 1979-80

The Department of Education will continue to upgrade school facilities and plans a realistic program of grade expansion in rural communities. The Yukon Teacher Education Program will change emphasis this September, offering a paraprofessional training program in place of the one year transfer program.

Various new programs will be offered in the schools in the forthcoming school year. The major program will be a new elementary language arts program. The Language Research Project, carried out by the Council of Yukon Indians, will be funded through the Government of Yukon. Funds in this project include a language arts specialist to assist the schools' Indian language instructors.

The Continuing Education Study, due in September, will be used to plan directions in the Adult and Continuing Education Branch over the next number of years.

In the Manpower Planning Branch, the focus for the next year will be preparation of Matrimonial Property Legislation. A course will be offered early in 1979 entitled "Pre-Trades Training for Women". This program will offer opportunities for training Yukon women in non-traditional areas.

During 1979-80 the Recreation Branch will conduct regional recreation board workshops, a youth leadership course, and the second annual recreation board members' seminar. A games plan will also be implemented. The plan will consolidate all aspects of training for both Canada and Arctic Winter Games, providing support to athletes and an element of consistency to Yukon involvement in Games.

Department of Consumer and Corporate Affairs

Responsibilities

Consumer and Corporate Affairs is responsible for motor vehicles, labour standards and safety inspections, corporate registrations, personal security registrations, metric information, business and professional licensing and consumer services.

Review 1978-79

Motor Vehicle Branch

This section administers the Motor Vehicles Ordinance and the Transport Public Utilities Ordinance. In 1978-79, 20 910 vehicles were registered in Yukon and 5 673 persons were licensed to drive. A new Motor Vehicles Ordinance, similar to the Motor Vehicles Acts in other jurisdictions, passed into law in 1978. It provides for reciprocal driver licensing by class.

Labour Standards

Inspection Services were decentralized as Health Care Insurance Plan enforcement transferred to the Health Services Branch and Business Licence, Landlord and Tenant, and Consumer Protection activity to the Consumer Affairs Section. A new Occupational Health Section was established. The original section is now responsible for enforcement of Labour Standards and Human Rights legislation.

A total of 216 complaints were received under the Labour Standards Ordinance and four under the Fair Practices Ordinance. Twenty payroll inspections were conducted. The section collected \$71 907 in outstanding wages and 75 prosecutions were initiated. Twenty-seven of the prosecutions resulted in conviction, while 34 were withdrawn, usually after out-of-court settlement was reached. Five of the cases were dismissed and one is under appeal.

Companies and Partnerships

There were 349 new companies formed under the Companies Ordinance, including 179 incorporations and 170 extra-territorial registrations. Eighty-nine companies were removed from the register, 13 were withdrawn, and one was restored. Fifty companies changed their names.

A total of 2 398 documents and 233 charges and discharges were registered under the Companies Ordinance. A total of 474 name clearance requests were processed, 1 468 searches conducted for the public and 2 678 letters sent out in reply to various inquiries. There were 189 partnerships and trade names registered under the Partnership Ordinance.

Societies and Cooperative Associations

Twenty-nine societies and cooperative associations were incorporated, 43 were removed from the register, and one society was restored. One society changed its name. Sixty-four annual returns and 59 other documents were registered under the Societies and Cooperative Associations Ordinances.

Securities

One security issuer, five brokers, eight salesmen, and 17 prospectuses were registered under the Securities Ordinance.

Documents

A total of 5 186 documents were registered under the Bills of Sale, Conditional Sales, Assignment of Book Debts and Garage Keepers' Liens Ordinances.

Metric Information Centre

Yukon conversion to metric in 1978 included the Motor Vehicle Ordinance and Regulations, Highways Ordinance and Regulations and Liquor Ordinance and Regulations. The Metric Centre handles an average of 35 public inquiries a month along with numerous special requests from all government departments concerning metric conversion. A total of 400 persons completed the secretarial seminars for writing S1 in 1978. A Metric Seminar for Construction attracted 60.

Consumer Affairs

Under the Business Licence Ordinance, 538 licences were issued. Of this total, 159 were issued by territorial agents. A total of 157 Insurance Licences were issued to 87 companies, 33 agents, 18 salesmen, seven adjusters, eight brokers and four special brokers. Licences were issued to 45 doctors, 147 lawyers, two chiropractors, nine dentists, 12 dental hygienists/therapists, two optometrists and nine pharmacists. Under the Real Estate Ordinance, nine agents and 11 salesmen were licensed. Under the Scientists and Explorers Ordinance, 47 licences were issued. There were 71 notary public appointments issued and nine clergymen were registered. There were 47 landlord and tenant enquiries and complaints and 63 consumers enquiries and complaints since January 1 - the date that the department started keeping records of enquiries.

Department of Health and Human Resources

Health Services

Responsibilities

This department administers programs, integrated into a complete health care delivery system, which provide health services to the residents of Yukon. The department is part of the Health and Human Resources portfolio.

The Medical Services Branch of Health and Welfare Canada, in close consultation with Yukon Territorial Government, operates as the territorial public health component. This includes programs in environmental health, public health nursing, mental health, health education, infectious and chronic disease control and a school program. These are carried out through health stations and health centres located in communities throughout the territory.

Rehabilitation Services provides assistance to disabled or handicapped residents. This may be counselling, special training, supply of prosthesis, sheltered workshops or a combination. The service works closely with the Yukon Rehabilitation Centre and other community organizations. A full-time ambulance service is operated from Whitehorse General Hospital. Volunteer ambulance services on a demand basis are located in Beaver Creek, Destruction Bay, Haines Junction, Teslin, Watson Lake, Faro, Carmacks, Mayo and Dawson.

Hospitals and medical care is provided through the two insurance plans - Yukon Hospital Insurance Services and Yukon Health Care Insurance Plan. Funding is supplied from general revenue and residents premiums. Contributions to the cost of both plans are made by the federal government through the Established Programs Financing Act (Canada). There is no geographic restriction to services, but where they occur outside of Canada payment is limited to the Yukon fee schedule.

Review 1978-79

Vital Statistics was transferred to Health Services from Consumer and Corporate Affairs April, 1978. From January 1, 1978, to December 31, 1978, there were 442 births, 194 marriages, 104 deaths, eight stillbirths, 18 delayed birth registrations, two delayed marriage registrations, 39 adoptions, 11 name changes, 13 legitimations and 28 corrections to original records registered for Yukon. During the year, 1 381 birth certificates and 166 marriage licences were issued in Whitehorse.

No significant changes were evident in the established pattern of demand for health services. Increased costs reflect the effects of inflation and population growth. Extension of the Faro facility to increase the bed capacity of that hospital is a direct result of population increase.

Negotiations for the transfer of services from Medical Services Branch of Health and Welfare Canada to the Yukon Government reopened in August, 1978. The negotiations also involved the Department of Indian Affairs and Northern Development. These discussions, nearing completion when the federal election was called, will resume now that the voting is over.

Yukon Hospital Insurance Program

	1978-79	1977-78	Increase (Decrease)
In-Patients			
Patient days	25 804	28 008	(2 204)
Separations	3 773	4 135	(362)
Average length of stay (days)	6.8	6.8	
New Borns			
Patient days	2 448	2 462	(14)
Separations	520	414	106
Average length of stay (days)	4.7	5.9	
Out-Patients			
Diagnostic	12 908	10 800	2 108
Accident	3 387	3 458	(71)
Accident (3rd party)	139	338	(199)
Total	16 434	14 596	1 838
Costs	\$	\$	\$
In-patient services	5 374 586	4 651 909	722 677
Out-patient services	218 166	217 131	1 035
Administration	81 300	101 642	(20 342)
Third party recoveries (9 778)		(6 664)	(3 114)
Total	5 664 274	4 964 018	700 256
Per capita cost	227.03	217.72	

Yukon Health Care Insurance Plan

Insured Services	\$	\$	\$
Payments to practitioners	2 388 679	1 851 651	537 028
Reimbursements	15 882	11 156	4 726
Payments to dentists	8 425	11 153	(2 728)
Total cost of insured services	2 412 986	1 873 960	539 026
Administration	213 321	244 010	(30 689)
Total costs	2 626 307	2 117 970	508 337
Per capita cost	105.27	92.89	

Alcohol and Drug Services**Responsibilities**

This division of the Department of Health Services develops, manages and coordinates programs to prevent and combat alcohol and drug problems in Yukon. It works with community action groups such as the Women's Alcohol Awareness groups in Mayo and Old Crow.

Alcohol and Drug Services' primary prevention program is aimed at providing information to Yukoners which will encourage non-hazardous use of alcohol. This program makes use of radio, TV, newspapers, pamphlets, posters and local citizens action groups.

Review 1978-79

Alcohol and Drug Services programming in communities, initiated in 1976-77, continued to expand. In 1978-79 emphasis was placed on upgrading programs in communities previously served and developing new services in Watson Lake, Upper Liard, Old Crow, Mayo and Pelly Crossing.

An employee assistance program was initiated in Faro. The program was developed by the United Steel Workers of America two locals, Cyprus Anvil, and an Alcohol and Drug Community consultant in Faro.

Treatment services are provided through the Yukon alcohol treatment network. This comprises the Alcohol and Drug Services Administrator, the Whitehorse Detoxification Centre, Crossroads Residential Treatment Centre and community programs. The network allows each client to experience treatment as a unified process. Approximately 700 individuals were in treatment in 1978-79.

The first annual report on Alcohol and Drug Treatment Services in Yukon was made available.

Human Resources**Responsibilities**

Human Resources is part of the Health and Human Resources portfolio reporting to the Minister of Health and Human Resources. It consists of five program divisions: Field Services, Community and Family Services, Placement and Support Services, Social Services and Youth Services. There is also an Administrative Section.

The department is responsible for programs and services on protection of children, adoptions, services to unmarried parents, juvenile probation, services to senior citizens, social assistance and income maintenance programs. Residential facilities include two senior citizens lodges, seven group care homes for children and a residential complex for youth. The department provides grants to community-based social service agencies.

A full-range of services is available to all Yukon residents except those of Indian status who receive services administered by the Department of Indian Affairs and Northern Development. Service along the major highways is provided from the department's head office in Whitehorse, but full field offices are in Dawson, Mayo, Faro, and Watson Lake.

Review 1978-79

Reorganization, began in the previous year, was continued and new divisions established and consolidated. A major shift in staff responsibilities took place and supervisory staff was hired into the recently created divisions. An emphasis was placed on staff training, particularly in the area of youth services and senior citizen programs.

The Placement and Support Services Division remained responsible for adoptions, group homes, the Receiving Home and Assessment Centre, recruitment and processing of foster homes and placement of children. There was noted improvement in assessment and planning, helped by the establishment of a case conference process involving all relevant agencies. There was an increase in the number of children from other provinces placed with the Yukon families as well as a slight increase in the number of infants available for placement from Yukon. Nevertheless, prospective adoptive parents are being urged to consider older children. Close involvement with the Canada Adoption Desk and the Northwest Territories has ensured placement of almost all children ready for adoptive homes regardless of age or handicap. Formation of the Community and Family Service Division was completed in August, 1978. This division provides counselling service to individuals and families within the City of Whitehorse. The Field Services Division continued to work with local community groups involving individuals from the community hired on a contract basis. There was an emphasis on bringing the specialized services from Whitehorse to the communities and greater emphasis on decentralization of these services on a consultation basis.

The Social Services Division's two key responsibilities are social assistance and senior citizen programs. This division was involved in a review of income maintenance programs, still under way. The senior citizen program continued towards providing services to individuals in their own communities. In June, 1978, the Pioneer Utility Grant Ordinance was enacted to provide a grant of \$300 to senior citizens who live in unsubsidized accommodation. These funds are meant to offset the high cost of living in the North for senior citizens on fixed incomes.

The Youth Services Division was involved in an intensive staff training program. This, together with changes in programs, has allowed an increased number of young offenders to return to their communities after only minimal exposure to institutions. Much of this was achieved by the effective use of skills of social workers and probation officers.

Plans for 1979-80

No manpower growth in Human Resources is planned for next year. The department will be involved in a total evaluation of all programs with an emphasis on a review of the service to clients. The two main areas to be examined will be residential programs for youth and social assistance.

Long-Term Plans

The department's goal is to gradually decentralize by involving communities in the development of social service programs. This goal will continue together with the coordination of existing and planned services emphasizing preventive programs.

Department of Tourism and Economic Development

Economic Research and Planning Unit

Responsibilities

During the year, the Economic Research and Planning Unit became part of the newly-formed Department of Tourism and Economic Development. The unit's mandate is economic research and planning for the Yukon Territory. In-house research, planning and a statistical service is provided to government, the private sector and the public. Service to the government includes the analysis and subsequent advice on matters pertaining to the Yukon's future, particularly in the areas of mining, energy and economic development.

The unit released two new publications - "Yukon Economic Review" and "Yukon Labour Statistics". Both will be published on a regular basis in addition to the well-established price, rental and real estate surveys which monitor activities in Yukon.

Review 1978-79

During 1978-79 studies were undertaken in a wide range of areas including regional economic potential, public utilities, auto insurance, economic indicators, employment and unemployment. The unit is also actively involved in monitoring specific large-scale development projects and assessing the effects on population growth. The development of new analytical tools, such as the Yukon Economic Impact Simulation Model, gives the unit the capability of generating long-term development strategies for Yukon.

Tourism

This new department was formed at the beginning of 1978 when the Information Services Division of the former Tourism and Information Branch was transferred to the Department of Information Resources. The name was changed again in 1979, to the Department of Tourism and Economic Development.

Responsibilities

The department promotes travel to the Yukon and encourages development of tourist attractions and facilities.

Review 1978-79

Yukon's tourism industry enjoyed a record year by most measurements in 1978. Border crossings, the prime indicator of visitor volumes, increased 21 per cent over 1977 to a total of 364 000 persons for the calendar year. Estimated expenditures by visitors totalled \$33 million.

Highway traffic posted the biggest increase (38 per cent), mainly during the summer period. This reversed a trend of the past four years. Air traffic also increased 19 per cent, but train passengers entering Yukon decreased by the same amount. The fact that there were no strikes or road closures due to washouts was a factor in the record border crossing levels. Indicators of the length of stay by visitors were mixed, but generally show increases over 1977. Attendance at tourist attractions and information centers was generally up, while hotel-motel occupancy gained four percentage points over the previous year. Visitor origins changed only slightly in most cases, with California once again ranking first among states-provinces of origin. Canadians and foreign visitors continued to make small gains as a percentage of total visitors while US visitors posted corresponding decreases. The number of visitors from Alaska continues to decrease.

Three major construction projects will add 130 rooms to Yukon's available accommodation. Included are a 60-room \$1 million addition to the Klondike Inn in Whitehorse, a \$450 000, 30-room addition to the Whitehorse Travelodge and completion of the Eagle Plain Inn on the Dempster Highway near the Arctic Circle. The Inn includes 40 rooms, restaurant, store, lounge and garage and will cost \$6 million. At the same time, the territory lost one of its oldest and largest establishments, the Whitehorse Inn, which was closed in the fall for demolition. The 100-room structure, built nearly 40 years ago, until just recently was Yukon's biggest hotel.

The most negative aspect to the year was the threatened closure of the White Pass and Yukon Railroad. Due to mine closures and other economic factors the company has suffered a series of recent financial losses. Such a closure would be a serious blow to Yukon's tourism industry. There would be a direct tourist expenditure loss of \$3.3 million - about 10 per cent of the current total expenditure.

A Tourism Development Strategy for Yukon was completed in October after more than a year. The strategy provides a direction and framework for tourism development in the territory for the next five to ten years and includes a chapter on development opportunities. The private sector, through public meetings, and specific involvement of the Yukon Visitors Association provided input.

During the summer of 1978 a major visitor exit survey was completed of all Yukon exit points and transportation modes. This was the most extensive visitor survey ever conducted in the territory. Results should be available July, 1979.

The Klondike Visitors Association enjoyed a particularly busy and successful year in 1978. Attendance at KVA attractions in Dawson City was the highest ever, and earned the association a record \$100 000.

The Yukon Visitors Association continued its work on behalf of the industry's private sector, promoting cooperative projects with the Department of Tourism.

Plans for 1979-80

Cooperative marketing projects will be continued in conjunction with the Yukon Visitors Association (YVA). The YVA will receive additional funds from the department for convention promotion. New highway information signs will be erected on all Yukon highways. The completed tourism development strategy will be the basis for negotiating a Subsidiary Agreement for Tourism with DREE and DIAND. More emphasis will be placed on economic development.



Old Crow, with a population of approximately 250, is Yukon's most northerly community. This small Indian village is situated on the banks of the Porcupine River and is about 45 km north of the Arctic Circle.

Department of Municipal and Community Affairs

Municipal Services Branch

Responsibilities

The branch helps develop local government in Yukon communities and provides a full range of municipal services, including guidance to municipal governments, orderly community planning, and land development. It also promotes quality of life through urban social facilities and utilities.

Review 1978-79

A review of all municipal legislation indicated a need to update and consolidate existing legislation to correct present deficiencies. The branch obtained two additional professional staff members to coordinate land development and community planning. Projects carried out during the year under the Community Assistance Ordinance included the Dawson City recreation complex, sewage lagoon and dump in Watson Lake, cemetery and first stage of lagoon expansion in Faro, recreation complex and water and sewer system improvements in Haines Junction, completion of sewage lagoon in Teslin, renovations to recreation complex in Mayo, skating rink and garbage dump in Ross River, various projects in Whitehorse. Special funding was also provided to Dawson City for replacing its water and sewer system.

Several land development projects were carried out for residential, acreage residential, commercial and industrial land in Whitehorse, Mayo, Haines Junction, Teslin, Watson Lake and Carmacks. In addition, planning and design was started on other projects in various communities including Whitehorse, Teslin, Dawson City, Mayo, Haines Junction, Destruction Bay, Watson Lake and Faro. The Mosquito Control Program was conducted in all Yukon communities with successful results.

Plans for 1979-80

Programs under the Community Assistance Ordinance for the new year include: skating rink and garbage dump for Beaver Creek, recreation complex for Dawson City, water and sewer upgrading for Destruction Bay, completion of lagoon in Faro, garbage dump and swimming pool renovations in Haines Junction, upgrading water and sewer and complete renovations to Mayo recreation complex, skating rink in Old Crow, renovations to Teslin swimming pool, water extension and renovations to Watson Lake swimming pool.

Construction of the new water and sewer system for Dawson City will commence and an extensive land development program will be carried out in conjunction with additional planning for land development to meet anticipated future requirements.

Lands Branch

Responsibilities

This branch is involved in the sale, lease or other disposition of lands under the administration, control and management of the commissioner of Yukon.

Review 1978-79

An amendment to the Land Regulations was discussed for 1979-80. During 1978-79 sales agreements were entered into with 359 individuals and builders. Service cost recoveries amounted to \$5 811 343.

Plans for 1979-80

Land Development projects planned for 1979-80 include - 101 residential and 53 mobile home lots in the Crestview subdivision; 172 "C" residential and 38 industrial lots at Porter Creek; 400 "A" residential lots at Hillcrest; and 30 country residential lots at McPherson expansion. Land development projects for outlying areas in the planning stage are residential, country residential, industrial and commercial.

Assessment Services Branch

Responsibilities

The branch provides property assessment services to all Yukon taxing authorities. It prepares assessment rolls for municipalities and the Government of Yukon. The branch assists the Territorial Tax Collector, participates in Court of Revision and Appeal Hearings, and develops real property appraisals.

Review 1978-79

Assessment comparisons between 1978 and 1979.

<i>Location</i>	<i>1977-78 Assessment Tax Year</i>	<i>1978-79 Assessment Tax Year</i>
Whitehorse	\$179 786 205	\$179 016 990
Dawson City	3 228 255	7 528 140
Faro	8 141 680	8 119 700
Other Areas	37 008 765	32 275 660

Plans for 1979-80

New regulations will be formulated governing property taxation for the 1980 taxation year. Yukon would base its assessment on Whitehorse replacement costs.

Protective Services Branch

Responsibilities

Protective Services implements and administers fire prevention and fire fighting programs and provides fire fighting equipment. The service strives to reduce the loss of life, injuries and damage to property by providing efficient equipment for fire fighters and training.

The branch insures that all structures, building, equipment and appliances conform to the ordinances and regulations. It reviews plans and specifications of new structures to make sure they conform to the requirements of the National Building Code, Electrical Protection Ordinance, Steam Boiler Ordinance and Elevator and Fixed Conveyances Ordinance.

The branch maintains a continuing program of inspection of plumbing, electrical, steam boiler and pressure vessels, elevators and conveyances as well as inspections dealing with the Gasoline Handling Ordinance. Information is disseminated through news media, news releases, discussions, lectures, demonstrations and pamphlets to reduce the number of fires and keep acceptable standards.

Review 1978-79

There were 148 fires in 1978, an increase of 53 over the previous year. The loss increased from \$813 392 to \$1 310 350. Twenty five per cent of the fires occurred in homes. Forty two per cent of the fires were covered by insurance. Two fatalities occurred and five people were injured.

There are 39 licensed electrical contractors in Yukon. There were 1 021 permits issued to contractors and home owners and 2 510 electrical inspections were done. There were 55 gas and plumbing permits issued. Building permits totalled 276 covering \$10 781 500 in building costs. There were 1 819 inspections carried out under the Building Code.

The Steam Boiler Inspector is responsible for boilers, elevators, dumbwaiters, lifts and tramways. There were 256 boiler and pressure vessels inspected. Sixty-six power and steam engineers were certified.

Plans for 1979-80

A staff of ten inspectors, under the Fire Marshal, will provide a continuing program of fire prevention and building standards enforcement throughout Yukon. A travelling fire school will ensure that volunteer fire-fighters in 15 communities will receive adequate training in fire fighting methods.

Department of Justice

Responsibilities

This department provides legal advice and services to the commissioner, government departments and agencies of the territory and administers justice throughout the Yukon. Programs administered by this department include compensation to victims of criminal injury, court worker program, legal aid. This department also handles prosecutions under Territorial Ordinances and makes court appearances on behalf of the government and its officers. Additional responsibilities include drafting of ordinances and regulations.

The Whitehorse Correctional Centre provides institutional services for those incarcerated and the Probation Service supervises offenders and prepares court reports.

The Yukon Territory court system includes the supreme court, court of appeal and magistrate's court. There are justice of the peace courts in most outlying areas while the magistrate's court travels as required. The court system also supplies small debt officials and lay juvenile judges. The federal Department of Justice maintains a Crown prosecutors office in Whitehorse for prosecution of Criminal Code and federal offences.

The Probation Service has offices in Whitehorse, Watson Lake and Mayo. During the past year emphasis was on keeping offenders out of the Correctional Centre. Recently a field office was established at the Whitehorse Correctional Centre thus providing a resident counsellor who can become part of a treatment and classification team. A community work service program, applied to some field areas, was developed in Whitehorse.

The Whitehorse Correctional Centre is a medium security prison and designed to provide custody and care of both male and female prisoners serving up to two years less a day; detention and care of persons remanded for trial, for sentencing, for immigration and deportation hearings, and awaiting appeal hearings; and custody of prisoners awaiting transfer to federal or mental institutions. The Whitehorse Correction Centre carries out sentences imposed by the courts and takes action to return the individual offender to society.

A second magistrate's court in Whitehorse will be established in the summer, 1979. The Land Titles Office administers the Canada Land Titles Act in the territory. Registers are maintained for certificates of title and other documents such as mortgages and survey plans. Land Titles work increased 28 per cent in the last fiscal year.

The chief coroner administers the Coroners Ordinance and ensures that coroners are available throughout the territory and that their investigations in sudden deaths are carried out promptly and efficiently.

The public administrator handles the estates of deceased persons where no one has undertaken the administration. In the course of this work the public administrator settles accounts due to or by estates and handles all legal work involved. Where necessary he administers estates of persons declared mentally incompetent. This office also acts in legal matters for the benefit of minors.

As deputy chief coroner the public administrator is involved in the administration of the coroners ordinance. In the combined office a 39 per cent increase in current files occurred throughout the year but because of the decrease in files opened for estates, minors, and missing persons, the overall increase averaged out at ten per cent.

Department of Library and Information Resources

Responsibilities

The department's two functions include the Yukon Archives and Records Services, which covers archival and records management for all territorial government departments, and Library Services to the Yukon public and schools.

Review 1978-79

Since responsibility for records management services and staff was assigned Yukon Archives and Records Services April 1, 1977, approximately 1 360 new files have been created and 32 000 have been routed to departments. There were 220 m³ of records transferred from departments to the Records Centre and 70 m³ destroyed.

Yukon Archives, the only comprehensive Yukon information centre available, was used by more than 5 000 researchers and orders for more than 1 000 photographs were processed.

A Sunday evening lecture series was sponsored and, in many Yukon communities, visual displays were presented.

Library Services Branch, with a stock of approximately 150 000 items, served 55 outlets in Yukon communities. Statistics on distribution are not available because of a change to a block distribution system.

Cataloguing and processing of 16 421 new books, added copies, and audio-visual material was completed. The largest branch, the Whitehorse Public Library, circulated 81 589 books during the year. Media Services film collection distributed 9 192 films throughout the territory, 63 per cent of which went to schools.

Media Services trained 149 people in the use of audio-visual equipment.

Yukon and western Canadian artists held exhibitions at the Whitehorse Public Library Art Gallery. Public Library activities included children's story hours in Whitehorse, Dawson City, Haines Junction and Watson Lake; spring and fall craft fairs in Haines Junction and Watson Lake; film programs for young people in Watson Lake; and sponsorship of a community newsletter in Haines Junction. Through the coordination of adult education and cultural activities by the community, services programs at Faro continued to grow. Grant funds were provided to the Boreal Institute, University of Alberta, to continue the Yukon bibliography project. Parts of the bibliography are now available on-line from Q.L. Systems, Kingston, Ontario.

Plans for 1979-80

Over the long-term Yukon Archives will complete its planning for future expansion of archives and records management. New services will include micro-forms in records management and an in-house photographic technician. There will be greater emphasis on increasing access to government services in Yukon communities outside of Whitehorse.

Library Services Branch will continue its data systems study and the compilation of a public library development plan.

Department of Highways and Public Works

Responsibilities

The department maintains and constructs roads and buildings, operates ferries at Dawson City and Ross River, maintains Arctic B and C airports and emergency flight strips, looks after Government of Yukon office accommodations, provides mechanical and engineering services for all Yukon departments, operates vehicle weigh stations, provides municipal engineering services, and operates Yukon VHF System.

Review 1978-79

A total of 4 086.8 km of roads were maintained. Calcium chloride for dust control was applied to 1 491 km.

Arctic B and C airports were maintained under a contribution agreement with Transport Canada. Territorial emergency airstrips were maintained on either a year-round or seasonal basis depending on location.

The Yukon River ferry at Dawson City carried 41 063 vehicles and 121 911 passengers compared to 37 346 vehicles and 111 021 passengers in 1977-78. The cable barge over the Pelly River at the settlement of Ross River carried 7 245 vehicles as compared to 3 445 vehicles in 1977-78.

With Clinton Creek Mine closed, the Dawson Boundary Road reverted to a summer road and the maintenance camp closed. The Skyline over the Yukon River at Dawson was eliminated.

Vehicle Weigh Stations operated at Watson Lake, Whitehorse and Haines Junction to implement provisions under the Highways Ordinance and Motor Vehicle Ordinance.

Work on the Klondike Highway continued with reconstruction of 24.1 km and paving of 14.5 km. The paving project through Carmacks, from Mile 94 to Mile 104, which commenced in 1977-78, was completed. The construction of the Carcross/Skagway Road was completed by Public Works Canada. However, some old road sections still require reconstruction and the department received federal funding and reconstructed this road between Mile 48 and 50. The Alaska Highway was upgraded between Beaver Creek and the Alaska/Yukon Boundary. A major bridge construction contract was awarded to replace the Tagish Bridge. The completion of this project is scheduled for the fall of 1979.

The landing strips of Beaver Creek and Faro airports were resurfaced and a passenger cargo shelter built at the Old Crow airport. This was all done under cost recovery agreements with Transport Canada.

Two projects which commenced in 1977-78, construction of the Fraser Road Maintenance Complex on the Skagway Road and the addition and alterations to the Selkirk Street School in Whitehorse, were completed. Contracts were awarded in late 1978 for construction of additions and alterations to the two schools in Watson Lake and the school in Haines Junction. A warehouse was constructed in Whitehorse for use by Supply and Services. Maintenance on all Yukon Government buildings was carried out as required.

Property Management operated and maintained office accommodations with departmental personnel or through contracts. Workshops in Whitehorse and Dawson City and field or camp mechanics provided services for all Government of Yukon equipment.

Plans for 1979-80

The various programs of the department will continue. Programs to be completed include: School additions and alterations at Watson Lake, Haines Junction, and Faro; Tagish Bridge construction.

Road reconstruction on the Klondike Highway will include paving from Mile 29-35 and upgrading between Mile 49-62. A two-year reconstruction project is planned for the Dawson-Boundary Road between Mile 35 and Mile 60. It is planned to complete the Carcross-Skagway Road to a uniform standard by reconstructing the remainder of the old section between Mile 35-50. Gravel surfacing will also be applied between Mile 50 and 85.

Department of Renewable Resources

Wildlife Branch

Responsibilities

The branch administers and enforces the Game Ordinance, Fur Export Ordinance, Brands Ordinance, Pounds Ordinance, Migratory Birds Convention Act, Canada Wildlife Act, International Agreement on the Conservation and Management of Polar Bears, International Agreement on Trade of Endangered Species of Flora and Fauna, Game Export Act, and the Freshwater Fisheries Regulations. It also conducts various research and educational programs for wildlife resource management.

Review 1978-79

A biologist was hired for management of predatory animals, grizzly, polar and black bears, wolf, coyote, and cougar.

The Wildlife Branch continued its native training program, financed through the Department of Indian Affairs and Northern Development, as five native people took part. A training coordinator was hired for part of the year. Big game inventory work covered those portions of Game Management Zone 2, situated near the Dempster Highway. Annual surveys were carried out to assess the status of accessible sheep, goats and moose populations in the southern Yukon, particularly close to population centres. Hunter check stations were maintained near Whitehorse, and all sheep, goats and grizzlies taken in the Yukon during 1978 were inspected and measured. Detailed questionnaires were sent to all hunters at the end of the season to establish harvest statistics.

A study of grizzly populations was initiated. It includes field work in the Ogilvie Mountains, monitoring of garbage dumps, accompanying outfitters in the field and distribution of questionnaires to bear hunters. A number of big game studies carried out by the branch, and partially or totally funded by Foothills, will assess potential impact of the proposed pipelines. These studies included caribou, falcon and grouse work along the Alaska Highway pipeline route and caribou, sheep and falcon work along the Dempster lateral pipeline route. The study of the Porcupine caribou herd continues to be a high priority. Two technical people work on this project in the northern Yukon in summer and along the Dempster in winter. Supplementary funding for Dempster Highway related work on caribou, sheep and falcons was obtained from DIAND, Northern Roads and Airstrips Division. Waterfowl and falcon research in the northern Yukon continued. Experiments were initiated on re-introductions of falcons into depleted areas. Monitoring of certain ptarmigan populations was continued. Considerable effort was spent to upgrade the reporting system on furbearer harvest and trapline administration.

The fur section of the branch continued its research on marten, beaver and wolverine. Habitat analyses work was concentrated on the winter range of the Porcupine caribou herd and on marten biotype assessment. A hunter safety course, initiated in 1974-75, was expanded and taught in a number of Yukon schools. The Wildlife Branch also continued to teach students firearm safety, first aid, outdoor survival and principles of game management at the outdoor camp at Kluane Lake.

Plans for 1979-80

No new projects will be initiated in 1979-80, since funds and staff are essentially the same as in 1978-79. New projects will be limited to administrative matters, such as streamlining the licencing and permit-granting system through computerization. Some studies begun in 1978 will be carried out in more detail, such as the grizzly bear management program. Falcon inventory work will shift from the northern Yukon to the Peel River drainage. No inventory on big game is planned for 1979-80 since a re-assessment of the status of goats in the Yukon is necessary. Three people will be involved in the native training program during 1979-80.

A major submission on the future of wildlife management in the Yukon and essential manpower and budget requirements for a ten-year period has been submitted to the government for consideration.



The second highest mountain in North America is the 6 050 m Mount Logan. Located in Kluane National Park, in southwestern Yukon, Logan is second only to Alaska's Mount McKinley. Government of Yukon Photo.

Parks and Historic Resources Branch

Responsibilities

Parks and Historic Resources was created in June, 1978.

The branch plans, develops, manages and administers outdoor recreational areas and historic sites for residents and visitors. The branch currently maintains 65 sites and areas in three districts throughout Yukon.

Review 1978-79

The attention of the branch has been focused on the rehabilitation of existing campgrounds and expansion of the system to accommodate rapidly increasing use. A manual "Design Guidelines for Yukon Parks" was prepared to standardize and upgrade landscape design throughout all campgrounds. Rehabilitation and expansion work was undertaken in Wolf Creek, Simpson Lake, Kusawa Lake, Congdon Creek, Lake Laberge and Yukon River campgrounds. Site plans were prepared for a number of other campgrounds in preparation for future development work.

An interim agreement with the ARC Branch, Parks Canada, provided river patrols and work crews on the Yukon River to collect user information, develop and maintain camping areas and stabilize and restore various historic buildings and structures. It is expected the interim protection program will continue. Planners from both branches are preparing a concept plan for long-term development and management of the Yukon River. The concept plan is expected to be completed in early 1979 and serve as a negotiating document for long-term ARC agreement between Parks Canada and the YTG.

During the year, branch staff drafted a subsidiary agreement under the General Development Agreement to take inventory of renewable resources and expand and upgrade outdoor recreation facilities. The agreement is expected to be signed in early 1979 and cover a three-year period.

A park planner was recruited in January, 1979, and will be responsible for systems, master and site planning for territorial parks.

Resource Planning Branch

Responsibilities

The Resource Planning Branch plans and guides the use of Yukon's natural resources for optimum benefit to Yukon residents.

Review 1978-79

The director assumed responsibilities in January, 1979, and the branch was staffed with two resource planners and one secretary.

During the past year the branch worked on and completed the Dempster Highway interim management plan. On-going work continues on a final Dempster Highway management plan, the Alaska Highway Gas Pipeline, an Agriculture Policy, the Shakwak Highway, and the Porcupine Caribou Range Task Force. The branch represented the department on several inter-departmental and inter-governmental committees.

Department of Government Services

Supply and Services

Responsibilities

This branch looks after purchasing, printing, warehousing, mail services, stationery stores, shipping and receiving, asset control, car pool and the telex-dex communications systems.

Review 1978-79

Many changes occurred in the Supply Services organization. A complete reorganization of the entire branch was completed. Supply and Services was transferred from the Department of Finance for the newly-formed Department of Government Services. A physical change was also made as Supply Services moved its operations into quarters in a newly-constructed Supply Building.

The branch was divided into four separate sections; Administration, Purchasing, Warehousing/Transportation and Queen's Printer. The Queen's Printer section was the only area to remain in the main Administration Building. Incorporated in the Supply Services Branch and reporting to the above sections are Mail Services, Telex/Dex Communications, Stationery Stores, Shipping/Receiving, Asset Control and Car Pool Systems.

The Administration Section formed a new position of assistant director who is directly responsible for the Queen's Printer, Warehousing/Transportation and branch budgets. The first Yukon Government Supply Manual was completed.

The Sign Shop was transferred back to the Department of Highways and Public Works and advertising was placed under individual department control.

Purchasing on behalf of clients exceeded \$12 000 000 and \$4 000 000 was spent on service contracts. Over 13 000 purchase orders were issued.

New procedures were established by way of Standing Offer Agreements. Maximum for local purchase orders increased from \$100 to \$200. Change orders were eliminated in favour of invoices that were out ten per cent or less. Transportation was also responsible for creating an Air Charter Transportation policy and is developing a Yukon Government car pool policy.

Both Supply Services Branch and Central Stores acquired new buildings.

The Queen's Printer will create an official Yukon Gazette, available for distribution nationally. It is anticipated that this will be available for the fall. This section will also be looking at centralizing photocopier and word processors requirements.

Public Affairs Bureau

Responsibilities

The bureau informs the public about Yukon government activities, programs and services. It fulfills this function through press releases, advertisements or advertising campaigns, publications, slide shows, exhibits, photography, newsletters, feature stories, news conferences or radio and television interviews.

The Public Affairs Bureau also operates the Yukon Government Inquiry Centre in the Territorial Administration Building as well as an information office in Vancouver.

Review 1978-79

In addition to numerous reports, books, pamphlets and slide shows, the public affairs bureau issued 333 press releases, answered more than 150 000 inquiries, and mailed approximately 15 000 information kits in answer to written requests for information on Yukon.

Data Systems and Computer Services

Responsibilities

This branch provides systems analysis, programming, computer and keypunch services. There are 19 production systems being run and five in various phases of development.

Yukon Workers' Compensation Board

During 1978 the Workers' Compensation Ordinance was changed to Workers' Compensation Board. All personnel, including pilots and other members of air crew, were brought under the ordinance. Voluntary coverage was extended to casual workers, domestic servants, and persons ordained or appointed clergymen, members of religious orders, or lay readers.

Pensions to dependent widows or widowers were increased to \$297 from \$226 per month and pensions to dependent children to \$97 from \$73.

A Merit Rebate Plan was adopted. This means that an employer who has a good accident record and meets certain conditions is eligible for a merit rebate of up to 25 per cent of the payroll assessment for the year considered.

The minimum assessment that shall be levied was increased to \$25 from \$10.

Claims

The total number of claims reported to the board during 1978 was 1 706 compared with 1 536 during 1977.

Assessments

During 1978 there were 1 451 employers registered compared with 1 375 during 1977.

Yukon Liquor Corporation

Responsibilities

The Liquor Corporation regulates importing, distribution and retailing of all alcoholic beverages within Yukon. It ensures that the requirements of the Liquor Ordinance, the attendant regulations and the goals and objectives of the corporation are upheld. The corporation can issue, cancel, refuse or suspend liquor licences. The enforcement of the Ordinance entails inspections of all licensed premises.

Review 1978-79

The Yukon Liquor Corporation assumed full financial and accounting responsibility April 1, 1978. This included control of the corporation bank account, cheque writing and signing, data input, general ledger, and all other matters relating to accountability. The first annual report of the corporation, tabled in the Legislative Assembly, covered the first year of operation, 1977-78. The Board of Directors, which comprises the Liquor Board, has gradually assumed all of the legislated responsibilities and is involved in the gradual evolution of required by-laws, policies and orders.

Liquor licences issued during 1978-79

	1977-78	1978-79
Liquor cocktail lounge	42	47
Beer tavern	16	10
Dining Room liquor	26	24
Restaurant beer and wine	32	34
Liquor off premises	58	57
Beer off premises	35	31
Club liquor	8	10
Beer Canteen	5	4
Special liquor	3	4
Aircraft liquor	2	2
Room service liquor	18	18
Mess liquor	1	1
Total	246	242

This slight decrease results partially from the closure of several beer taverns throughout the reporting year.

Permits were approved and issued in 1978-79

Special occasion permits	662
Reception permits	96

Total liquor sales, including surcharge, in 1978-79 were \$9 549 425.

In the previous year they were \$8 535 373.

During the year, the corporation was named coordinator for a new Standing Committee for Alcohol Related Programs. The Standing Committee is composed of territorial departments, federal departments and agencies, and native organizations. The terms of reference, laid down by the Standing Committee, include the assessment and review of all present programs related to alcohol problems, determination of needs and long-range program proposals on all programs related to the misuse of alcohol. The coordinator will come under the direction of the general manager of the corporation, working closely with the Subcommittee named by the Standing Committee. Findings will be reported to the Standing Committee for further recommendation and reference.

Plans for 1979-80

The corporation seeks to combine the revenue objective with a sense of moral obligation that assures the well-being of Yukon residents. Positive measures in these directions will be the corporation's plan in the new year. The need for profit revenue from the Liquor Corporation to the Territorial Government is compounded by the restraint program. All attempts will be made to ensure control of operation and maintenance costs. Continued investigation of methods of purchasing, transportation, and other cost factors will help ensuring maximum revenue at the lowest possible prices.

The coordination, as outlined in the review, will help the corporation carry out the social development objectives. The education, prevention, treatment, rehabilitation and study of on going problems from the misuse of alcohol will play a major role in the corporation's activities.

All advertising referring to liquor, as outlined in the Corporation Policy, will be reviewed so that it will have no adverse affects. Examination of liquor legislation to ensure that policies and practices are in line with overall social development aims of the government will continue.

The maintenance and development of a corporate structure, independent of political involvement, is the intent of the legislation forming the corporation. This will be a part of the plan for 1979-80.

The selection of new brands of wine, beer and liquor, according to demand and public acceptance, will continue.

Yukon Housing Corporation

Responsibilities

The Yukon Housing Corporation develops, provides and operates housing projects and programs. The corporation's client group extends to many segments of the population, including low and modest income individuals, families, senior citizens and staff of the territorial government.

Review 1978-79

Little in the way of new construction activity was undertaken in 1978-79. Instead, efforts were toward upgrading existing housing, acquiring additional housing by way of lease from private landlords and developing plans for 1979-80 housing projects. The corporation also continued its efforts toward the evolution of private housing through continued sales of YHC housing to private individuals. Residential energy conservation and thermal efficiency was also a concern during 1978-79. Infra-red heat loss surveys were made available to residents throughout Yukon at no cost with advice and information on opportunities for savings.

Plans for 1979-80

Construction activity is expected to increase with the building of housing projects for senior citizens in Whitehorse and Watson Lake. As well, continued efforts will be made to expand the opportunities for private home ownership throughout Yukon. With this in mind, expanded activity under the ownership aspects of the Rural and Remote Housing Program is expected along with other, broader policy initiatives.■



1979-1980 Government Activities in the North

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Projet



1979-1980 Government Activities in the North

1979-1980 Report and 1980-1981 Plans
Advisory Committee
on Northern Development

Document ND 532

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Cette publication peut aussi être obtenue en français

As minister primarily responsible for ensuring co-ordination of federal activities in the Canadian North, it is a pleasure to present this report on the past year of Government Activities in the North. Requested by Cabinet in January 1953, and published annually since then, the publication has become a useful consolidated source of information on current northern activities, plans and programs of the federal and territorial departments and agencies.

The report is unique in the fact that it is the only such consolidation combining federal and territorial activities in the North. It also portrays the degree of co-operation between departments and agencies in discharging their respective northern mandated responsibilities.

While this report conveys a narrative description, a companion volume entitled "Annual Northern Expenditure Plan" provides the level of expenditure against the various categories of northern objectives. The two when viewed together should present to the reader a reasonably complete picture of the extent and nature of government programs in the North.

Honourable John Munro,
Minister of Indian Affairs and
Northern Development

Introduction

The 1979-80 edition of *Government Activities in the North* is published in both official languages by the Advisory Committee on Northern Development.

This publication reports annually on government activities in the Yukon and Northwest Territories. In this report, federal departments, agencies, crown corporations and both territorial governments, outline northern responsibilities, review past year's activities and project plans for the fiscal year 1980-81.

Much of the material used under *Plans for 1980-81* had to be assembled in the latter part of the fiscal year 1979-80. By the time this publication is released, many of these will be accomplishments, while others will have been modified or abandoned. As a result, they are treated throughout as being in the future.

Government Activities in the North is a companion report to the publication *Annual Northern Expenditure Plan 1980-81*. Together they form a complete source of information on all aspects of government activity in the North.

Both these publications are available from the Publishing Division, Department of Indian Affairs and Northern Development.

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N.B. Map on Inside Back Cover

Federal
Departments
and Agencies

Advisory Committee on Northern Development

ACND

Responsibilities

The ACND provides the mechanism for interdepartmental planning and coordination of federal policies and programs pertaining to the Canadian North.

The ACND reports to the Minister of Indian Affairs and Northern Development through its chairman, the deputy minister of the department.

Principal ACND committees and their chairmen are:

Policy

P.M. Tellier, Department of Indian Affairs and Northern Development

General

Hughette Labelle, Department of Indian Affairs and Northern Development

Transportation

J.J. Seguin, Transport Canada

Science and Technology

Dr. A.E. Collin, Department of Energy, Mines and Resources

Northern Communications

D. Rainboth (Acting), Department of Communications

Employment of Native Northerners

Department of Indian Affairs and Northern Development

Federal-Territorial Economic Planning

G.N. Faulkner, Department of Indian Affairs and Northern Development

Advisory Committee on Industrial Benefits from Natural Resources Development

G.E. Hughes-Adams, Department of Industry, Trade and Commerce

Federal Interdepartmental Coordinating Committee - Yukon

D. Bell, Administrator

Northwest Territories Coordinating Committee

J. Parker, Commissioner

Interdepartmental Advisory Committee on Northern Roads

D. MacKinnon, Department of Indian Affairs and Northern Development

Federal Territorial Regional Planning

Co-chairmen, D. MacKinnon, Department of Indian Affairs and Northern Development, R. Creery, Government of the NWT

Information on the terms of reference for each committee is available through the ACND Secretariat.

In addition, working groups, which report to the principal committees, are formed as required to deal with specific tasks or projects. ■

Responsibilities

Agriculture Canada provides technical assistance through consultation and research to those in the North dealing with agricultural production and soils and vegetation. It also provides identification research and consultative services for insect and plant fauna.

Review 1979-80

The level of northern activities by Agriculture Canada were about the same in 1979-80 as in the previous year.

Work continued on the northern Canada soil resource inventory. Information generated by this program will be used to produce a generalized soil map of the territories.

Identification services were again provided for northern fauna. Numerous scientific papers were published on the taxonomy of northern insects, vascular plants and fungi and the book, *Vascular Plants of Continental Northwest Territories*, Canada, is now ready for publication.

Soil temperatures are being monitored at eight sites in the Inuvik-Arctic Red River area. This study seeks to characterize the soil temperature regime, the thermal regime of the active layer, and the high subarctic soil climatic region. The Inuvik Scientific Resource Centre is monitoring the soil temperatures, snow depth, and depth of thaw.

At the Resource Inventory Workshop in Whitehorse, C. Tarnocai of the Land Resource Research Institute presented a paper relating to soil inventories, discussing their methods, approaches and interpretations.

This workshop provided land use planners and managers in Yukon with an appreciation and understanding of how resource inventories are carried out, how information is assembled and interpreted, and how resource information can be used in planning and management operations. Further, it developed guidelines for resource inventories planned for Yukon during the next three years under the provisions of the Department of Indian Affairs and Northern Development and Yukon agreement.

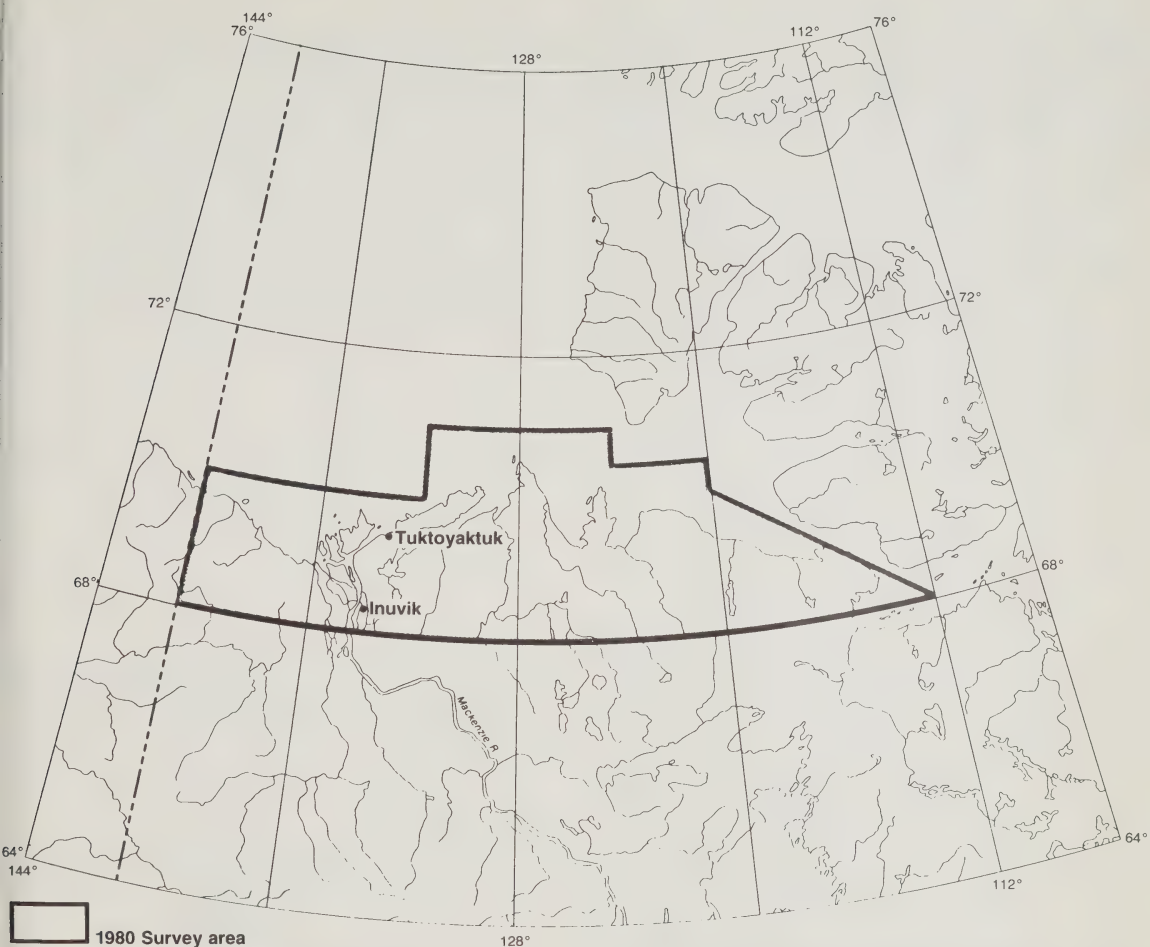
Preparatory work on a soil inventory project in the western arctic began. This work involved interpreting the satellite imagery and working out field work logistics. The project, part of the soil resource inventory program for northern Canada, will be carried out by the Institute. The data will provide information for areas of northern Canada where no soil resource survey has yet been carried out. This data will be used to prepare a generalized soil map for the territories and for various land use interpretations.

No field work was carried out during 1979 north of the 60th parallel by the Northern Research Group. The plan to observe the persistence of the seeded forages at the Grand Detour site was cancelled due to the restraint program and the transferring of the coordinating researcher.

Plans for 1980-81

Soil temperatures will continue to be monitored in the Inuvik-Arctic Red River area. A preliminary analysis of this data will be carried out to provide information on certain soil temperature parameters at different depths. Some of these parameters are: mean annual and summer soil temperatures, maximum and minimum soil temperatures, number of days below 0°C, and depth of thaw. Work will continue on the compilation of soil maps at a scale of 1:250 000 for Bathurst, Cornwallis, and adjacent islands.

Field work will be carried out in the western arctic soil survey inventory project. Information will be collected concerning soils, associated landforms, parent materials, ice content and vegetation. Soil maps will be prepared at a scale of 1:1 000 000 for the entire area and at a scale of 1:250 000 for the Aklavik and Mackenzie Delta map areas.



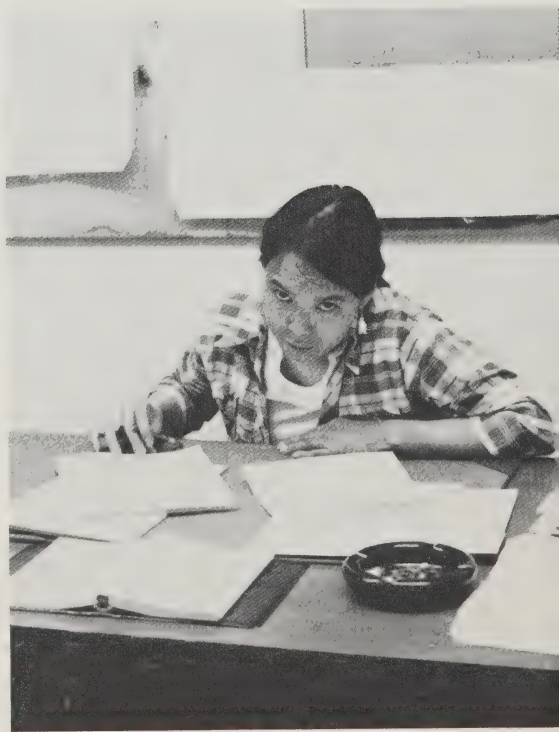
Map indicating the soil resource survey area in the western arctic

The Biosystematics Research Institute has continued to provide an identification service on insects, arachnids, nematodes, vascular plants and fungi from northern Canada. In particular, a large collection of vascular plants from Banks Island was identified for the Canadian Wildlife Service as a part of its studies for a possible new national park. Numerous scientific papers were published on the taxonomy of northern insects, arachnids, nematodes, vascular plants and fungi. Of particular interest was a handbook entitled *Mosquitoes of Canada*. The book, *Vascular Plants of Continental North-west Territories, Canada*, a cooperative project of Agriculture Canada and the National Museums of Canada, is scheduled for publication in 1980. A new project on the flora of the Yukon Territory has been initiated.

It is anticipated that field surveys will be undertaken in the Yukon Territory during the summer. The survey team will include two entomologists, a mycologist and a botanist. The studies will include all areas accessible by road, but some special attention will be directed to Kluane National Park. ■

Canada Employment and Immigration Commission

CEIC



Native students are active in the Summer Youth Employment Program.

Responsibilities

The commission helps meet employment needs of employers and employees. It uses wide-ranging programs and services, including Canada Employment Centres (CECs), professional counselling, recruitment services, training, relocation assistance, non-immigrant workers' control, industrial adjustment assistance, and the Unemployment Insurance program.

Operational responsibilities for the commission in the Yukon Territory come under the director, Yukon. Operational responsibilities for the commission's services in the Northwest Territories come under the territorial director, Employment and Insurance.

Federal-territorial relations provide consultation in policy development on employment and immigration matters. The Manpower Needs Committees in Yukon and Northwest Territories, with representation from several departments of the territorial and federal governments, meet frequently each year.

Yukon Territory

Review 1979-80

The commission focused on the maintenance and improvement of services to all areas of Yukon. In addition to the activities undertaken by Whitehorse-based staff, Outreach workers continued to provide employment services to their local labour forces.

Through personal visits to employers, liaison with employer organizations and communities and publicity programs, employers were encouraged to use the services of the commission, upgrade their work force through training, and develop methods to ensure maximum use of Yukon labour.

Canada Manpower Consultative Service activities continued with the Yukon Labour Force Development Council under a Manpower Assessment Incentive (MAI) Agreement. This major initiative, with representatives of industry, unions and the Government of Yukon, determines ways in which the Yukon labour force can participate more fully in existing and potential growth in the economy. The MAI Agreement enabled a core of displaced workers from Pacific and Arctic Motors Ltd. to incorporate and take over the assets of the former company as Pacific and Arctic Motors (1979) Ltd. A second MAI Agreement with this group is currently under way to ensure their successful establishment.

The Canada Summer Youth Employment Program operated from February to September, 1979. The graduate student manager contacted all post-secondary Yukon students regarding summer employment and identified student employment opportunities. In addition, two undergraduates provided assistance to Yukon secondary school students seeking summer employment. This was done through visits to potential Yukon employers, secondary schools, short courses on job search techniques and a public relations program. During the 1979 program, 1 241 students registered for employment and 778 were placed, up 35 per cent from 1978.

In February, 1980, the Canada Summer Youth Employment Program reopened.

Other full-time youth activities included specialized employment services such as counselling, marketing, placement, job search techniques, assistance to secondary school counsellors and the use of specific programs. Towards the end of the year these specialized services were combined with other employment counselling responsibilities.

A native employment specialist assisted in the application of all CEIC programs to the native segment of the labour force.

Canada Manpower Training Program activities continued throughout the year in virtually all courses offered by the Yukon Territorial government through the Yukon Vocational and Technical Training Centre, both in Whitehorse and in outlying communities. During 1979-80, approximately 43 000 training days were purchased under the Adult Occupational Training Act Agreement. This included basic training for skill development, skill full-time and skill part-time. In addition, a small number of trainees were referred to southern training institutions, primarily in British Columbia.

Canada Manpower Industrial Training Program provided financial incentives to employers who hired and trained unemployed and special needs workers and who upgraded the skills of those already employed. A total of 222 individual contracts with employers was involved in this training program.

The Employment Tax Credit Program, which expired March 31, 1980, provided 80 contracts during the fiscal year.

The Canada Manpower Mobility Program helps workers explore and relocate to jobs away from their places of residence, accept temporary jobs in other areas, travel to Canada Employment Centres for services not available in their home areas and travel to training courses. During the year, 73 temporary employment grants, 15 exploratory grants, and 10 relocation grants were authorized in Yukon.

Employment and Insurance operations included 5 559 registrations for employment, 8 408 referrals to employment opportunities and 2 728 placements. In addition, 546 visits were made to employers. Insurance operations processed 3 637 claims for unemployment insurance benefits.

Four small community-based Outreach projects were funded during the year in Watson Lake, Haines Junction, Dawson City and Mayo. These replaced the two large Yukon Outreach projects terminated on March 31, 1979.

The Employment Development Branch completed Cycle III of Canada Works projects carried over from 1978-79 and implemented Cycle IV, the final cycle under this program of nine projects valued at \$98 914. These nine projects created 32 jobs for 475 work weeks of employment.

The 1979 Young Canada Works program funded 21 projects creating summer work for 117 students. The value of these projects was \$171 156 and 1 136 work weeks.

The Local Employment Assistance Program (LEAP), which provides funds to develop long-term jobs and employment opportunities, approved 13 projects for a total of \$366 227 in 1979-80. This included one project carried over from 1978-79, nine transitional LEAP projects and three new ones. Much of this activity will be carried over into 1980-81.

The Yukon allocation for the 1980 Summer Youth Employment Program was \$591 000 and all development work and recommendations were completed by March 31, 1980. The new program replaced all previous internal and external Youth Employment Programs offered by the Government of Canada.

The Canada Immigration Centre in Whitehorse operates on a year-round basis and the Canada Immigration Centre in Beaver Creek from May to September.

Immigration operations included enforcement and control activities throughout Yukon. There were 2 972 people referred for secondary examination at the points of entry and 58 were found to be inadmissible and refused entry to Canada. In addition, 862 people were investigated inland and 125 were subsequently removed from Canada.

As a result of the Indo-Chinese refugee movement 24 families arrived in Yukon under the sponsorship of Yukon Lifeline, a local steering committee working under the Presbyterian Church's national agreement.

Considerable time and effort continued to be directed toward Manpower Planning for the proposed Alaska Highway Gas Pipeline and the Shakwak project. In addition, membership on the management committee and the various sub-committees of the two Sub-Agreements to the General Development Agreement required much time. Other planning and development activities relating to existing and proposed economic projects continued.

Plans for 1980-81

The commission will emphasize the improvement of services to all areas of the Yukon by: continuing to coordinate and integrate one-stop service; expanding services through existing programs; developing and supporting services through small community-based Outreach projects; making employers aware of the services available to recruit, retain and upgrade their work forces; ensuring that Yukon young people receive information and assistance in career planning; maintaining CEIC services to natives; coordinating implementation of new economic initiatives; and planning for employment and training demands from projects in the Yukon.

Northwest Territories

Review 1979-80

The Northwest Territories was served by Canada Employment Centres in Yellowknife, Hay River, Inuvik and Frobisher Bay. Full-time sub-offices were maintained at Fort Simpson, Fort Smith and Rankin Inlet and itinerant services were provided to all other major communities.

A full range of Unemployment Insurance programs were available in Frobisher Bay and Yellowknife. During 1979, 3 313 claims were processed for NWT residents.

The Canada Employment Centre (CEC) in Yellowknife, and its branch offices serve about 30 settlements with total population of more than 20 000. This CEC is responsible for about two-thirds of the NWT. Services are largely directed towards the government offices in the capital of the NWT and the major mines, including two large gold mines in Yellowknife.

The centre at Hay River is responsible for all labour market activities covering an area of 48 000 km² with a population of approximately 6 500. During the past year the CEC has concentrated on employer needs in four major communities with an emphasis on the transportation and mining industries.

The Canada Employment Centre at Inuvik is responsible for an area of approximately one-sixth of the territories and serves about 12 settlements with a combined population of about 6 000.

The Canada Employment Centre at Frobisher Bay is responsible for one-sixth of the area of the NWT also. It serves approximately 24 settlements with a combined population of more than 8 000. The staff looks after employment in the Baffin Region and the development of a new lead-zinc mine at Strathcona Sound.

More than 11 000 workers were registered with Canada Employment Centres in the Northwest Territories during 1979-80. Of these, more than 12 600 referrals were made to 5 600 known vacancies. More than 3 900 of those referred were placed in jobs.

CEC counsellors conducted 27 400 counselling interviews with workers and made 1 650 visits to employers.

Eighty community-based projects operated under the Canada Works Program Phase II (1979-80). The Canada Works Program provided 650 jobs in activities such as construction renovations of community buildings, co-ops, and local social and educational services (alcohol and drug abuse programs, cultural inclusion). Approximately \$1.3 million in federal funds were spent prior to January 31, 1980. Young Canada Works 79 program, focussing on student employment during the summer months, operated 33 projects with an allocation of \$333 000. The program provided 190 jobs in recreation, archeology and community-based clean-up activities. The Local Employment Assistance Program increased project activity from seven in 1978-79 to 27 in 1979-80. The amount spent in the NWT for this program was \$1.2 million. These projects provide life skill and trade skill training and the establishment of small business enterprises in isolated communities. Approximately 280 to 300 jobs were created in the fiscal year 1979-80.

The Canada Manpower Training Program, administered under an agreement between the commission and the Government of the NWT, was signed May 2, 1979, and expires March 31, 1981.

During the fiscal year, the commission purchased 49 900 training days from the Department of Education, Government of the Northwest Territories, to provide skill development for 162 trainees; apprenticeship for 309; and academic upgrading for 223 trainees.

In addition to institutional training purchased from the NWT, 208 contracts were signed under the Canada Manpower Industrial Training Program. They covered training for 529 trainees.

During the fiscal year, 12 grants were authorized under the Canada Manpower Mobility Program for workers to search for employment outside their areas of residence. There were 17 relocated to employment and 71 special travel grants authorized. Total expenditure for this activity was \$37 976. A further 14 exploratory grants and nine relocation grants were authorized for people looking for or accepting work in the Northwest Territories.

During 1979-80, Outreach programs operated in Baker Lake, Eskimo Point, Fort Liard, Fort Resolution, Igloolik, Pond Inlet, Pangnirtung, Fort Providence, Cambridge Bay, Tuktoyaktuk, Rae-Edzo and Yellowknife. A total of 12 Outreach workers were in the NWT.

Plans for 1980-81

The commission plans an analysis of the need for service centres in Norman Wells, Cambridge Bay and Rae-Edzo. It also plans to extend the penetration of commission programs into the youth sector of the NWT labour force and to place special emphasis on native employment. ■

Canada Mortgage and Housing Corporation

CMHC

Responsibilities

Canada Mortgage and Housing Corporation (CMHC) is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the territorial housing corporations and private non-profit organizations for new construction and the rehabilitation of existing houses. The day to day activities in the North are administered by branch offices in Whitehorse and Yellowknife.

Review 1979

Yukon

The Whitehorse Branch Office was officially opened January, 1979. This office has full approval authority for all lending activity under the National Housing Act in the Yukon. Previously, the territory was serviced by a local representative but loans were processed and approved by the branch office in Prince George, B.C. This change has improved the services.

During 1979, 174 housing units were financed under the NHA including 138 for owner occupancy and 36 in one multiple rental project undertaken by the Yukon Housing Corporation in Whitehorse.

The Yukon Association of Non-Status Indians (YANSI) assisted CMHC with a program of emergency repairs. During the year, 50 rural houses were improved with grants totalling \$78 000. A sustaining grant of \$99 100 was made to YANSI for continued support in housing programs.

Northwest Territory

During 1979, 341 housing units were financed under the NHA. The majority of these, 259, were financed directly by CMHC to the Northwest Territory Housing Corporation (NWTHC). The remaining 82 were NHA insured loans for owner occupancy. The NWTHC program was directed toward subsidized rental housing in many of the smaller communities in the territory, including 192 new units plus the rehabilitation of 67 existing houses. CMHC funding for this program in 1979 totalled \$13 742 000.

CMHC and NWTHC jointly sponsored regional housing conferences at Rankin Inlet in September and at Cambridge Bay in November. These conferences brought together people who are involved in the management of rental housing in the smaller communities. The conferences provided an opportunity to exchange information, identify problems, and propose solutions to improve housing conditions and management policy.

The Mackenzie Valley Housing Association (MVHA), a native group, assisted CMHC with the delivery of some programs in the Western Region. A total of \$323 000 was provided in grants and loans for the improvement of 105 houses in this part of the territory. A sustaining grant of \$175 000 was made to MVHA for its continued support in Mackenzie region housing programs.

A sustaining grant of \$96 000 was also made to the Inuit Non-Profit Housing Corporation (INPHC) to help it represent the interests of the Inuit population.



Assisted Rental Program apartments in Yellowknife, N.W.T.



Single family homes, of unusual design, in Yellowknife insured under the National Housing Act.

Total Activity Approved - 1979

	No. of Units	Amount \$000
Yukon (new and existing)	174	8 366
(rehab. and repair)	50	78
NWT (new and existing)	341	18 001
(rehab. and repair)	105	323

■

Canadian Broadcasting Corporation

CBC



The songs of northern musicians, traditional and contemporary, are preserved on CBC broadcast recordings. Here Charlie Panagoniak sings to a sell-out crowd at a CBC-organized concert.



Inuktitut-speaking broadcasters gathered together for a unique training course, conducted entirely in Inuktitut.

Responsibilities

The Northern Service of the Canadian Broadcasting Corporation was established in 1958 to provide a broadcasting service to meet the special needs of northerners, Inuit, Dene, Métis and non-native.

Radio

There are five radio production centres in the North, each preparing programs for culturally and linguistically distinct audiences. Yellowknife, NWT, is the program centre for the Mackenzie region; Inuvik, for the Delta; Whitehorse for the Yukon; Frobisher Bay for the Baffin and eastern arctic; and Rankin Inlet for the Keewatin.

Listeners in each of the sub-regions receive a combination of national and northern-produced radio programs, delivered through terrestrial and satellite networks and broadcast on local transmitters.

Newsrooms in Whitehorse, Yellowknife, Inuvik and Frobisher Bay produce daily northern newscasts. In-depth coverage of selected northern issues and events is provided through Northern Showcase, a continuing documentary series.

Distinct morning and current affairs shows also originate from each of the program centres, with the striking variable of these being language. A listener in Frobisher Bay, Rankin Inlet or Baker Lake can hear Inuktitut and English, while a Yellowknife or Rae/Edzo audience can tune into English, Dogrib, Slavey and Chipewyan programs. Up in the Delta, CBC programs are in English, Inuvialukton, Hareskin and Loucheux. By contrast, CBC in Whitehorse broadcasts to a largely English-speaking population of native and non-native Yukoners.

Teams of native language broadcasters cover special events. For example, this year CBC provided multilingual reports of the Northern Games in Inuvik, the Arctic Winter Games in Whitehorse, territorial council meetings and federal and territorial elections. Native language programming also includes translated newscasts, phone-in shows, oral histories, community reports, native music and message exchanges.

Radio staff periodically hold public meetings in the communities, encouraging listeners to express opinions and recommend changes to the service.

Radio societies in many communities have access to CBC transmitters at specified times of the day for airing their own local programs. Northern Service has provided community radio equipment and/or assistance to Spence Bay, Pangnirtung, Pond Inlet, Eskimo Point, Rae/Edzo, Fort Norman, Cape Dorset, Fort Franklin, Fort Good Hope, Igloodik and Rankin Inlet.

Northern Service also makes broadcast recordings of northern musicians from across the NWT and Yukon, distributing them to the radio stations and community access groups.

Review 1979-80

A Keewatin production centre was established in Rankin Inlet in response to a long-recognized need for programming in the dialect of the region. Inuit staff and community reporters contribute to Tusayaksat, a daily one-hour current affairs series about the Keewatin in the language of its people.

Inuit staff at Frobisher Bay conceived and began production of Tausonii, a popular daily one-and-a-half hour unilingual Inuktitut magazine series featuring Inuit culture through songs, legends and interviews.

Radio staff increased their travelling time this year, taking shows on the road to permit local residents and entertainers to be heard on the radio.

For the first time, networks of freelance reporters were established in most sub-regions to contribute community news to the morning shows. Seminars for these community reporters were held at Frobisher Bay, Yellowknife and Inuvik. These seminars required follow-up sessions with concentrated instruction to smaller groups.

The first Inuktitut-language announcer/operator training courses were held this year, focussing on the special needs of Inuit broadcasters. Conducted entirely in Inuktitut by a recognized language specialist, the sessions dealt with interview skills, story development, on-air performance and sight translations.

A reporter from the Yellowknife radio production centre was relocated to Hay River to meet the broadcast needs of a large non-native audience previously without an adequate voice on CBC. In addition, freelance reporters were established in other communities along the south shore to serve the more than 10 000 potential listeners.

Northern Service initiated a study of its radio distribution system to investigate split feeds to differing communities in the Delta and Mackenzie regions with programs tailored for the two separate channels.



Announcer/operator Paul Quassa prepares Tusayaksat, the CBC Keewatin magazine series originating from the new Rankin Inlet-based production centre.

Community radio was introduced in Fort Norman and out-dated community radio equipment in Eskimo Point was replaced.

Using multi-track recording techniques, Northern Service produced broadcast recordings of improved and professional quality this year. These recordings may be converted to commercial discs and marketed in northern stores.

As of April 1, Northern Quebec radio production became the responsibility of the French Services Division (FSD) of CBC. At the same time, a small production unit was established in Ottawa to provide information for northern listeners about activities in the capital.

Plans for 1980-81

Northern Service radio will refine its program and non-program methods of keeping in touch with its public so as to provide a useful and used service. This will be done through the encouragement and training of community reporters, broadcasts from outside the studios, increased CBC travel in the sub-regions, continued public meetings in the communities, access programming on major centre and community transmitters, improved north to south reflections on the CBC network, audience surveys, and improvement of delivery systems to provide more relevant programming. Steps will also be taken to improve facilities at Canada's major Inuit radio production centre in Frobisher Bay.

Television

While it was introduced to the North in 1967, television largely failed to reflect northern interests and lifestyles because of a lack of funds. While much progress remains to be achieved, some needs have been met.

Review 1979-80

This was the first full year of operation for the Northern Service television production centre in Yellowknife. Established in late 1978-79, the centre seeks to train and assist northern freelance film-makers, produce regional television programs and package northern-produced regional material for television exposure on the northern network.

To date, the new centre has not made a significant impact on the overall schedule in terms of volume and regularity but it is providing a base for development.

Production of the monthly television magazine series, *Our Ways*, is providing a showcase for films and videotapes by and about northerners.



CBC Frobisher Bay announcer/operator Ann Hanson (3rd from left) chats with senior citizens group. Their reminiscences are recorded on cassette for later airing on Tausoni.

Northern Service provided an introductory four-week Super 8 film workshop in Yellowknife and tailored it to novice film-makers.

Two regular television series continued this year -- Nunatsiarmiut, by the Frobisher Bay-based independent film group, and Tarqavut, a weekly Inuktitut information program produced in Montreal by CBC.

The production centre also produced specials on the federal election, the Northern Games and the Arctic Winter Games. The first access program was aired, presenting the Dene stand on land claims. A northern-produced two-part documentary about early life along the Mackenzie was aired on the CBC national network, permitting exposure to audiences in southern Canada.

Plans for 1980-81

Northern Service television will fund and telecast northern-produced, native people-created, television programming that reflects native, northern life. Northern Service will continue to produce northern programs and items, purchase and schedule independently-produced northern programs, develop a freelance resource base in media skills, and encourage the use of native language content. ■



Announcer/operator Joan Kalaserk prepares Tusayaksat, the CBC Keewatin magazine series.

Canadian National Railways

CN

Responsibilities

CN provides the North with transportation and telecommunication services. This includes transportation for the mining and forest industries, exploration and construction projects and residential and commercial telecommunications. Consultation services are provided for the logistical planning of pipelines, arctic rail and other studies.

Review 1979-80

There were no significant new activities in 1979 affecting CN Rail in regard to transportation services in the western arctic. The Great Slave Lake Railway (GSL Ry), owned and operated by CN, maintained service to Hay River and Pine Point, NWT. At the latter point, the GSL Ry serves the Pine Point Mines. The 1979 volumes of lead and zinc concentrate moved south were at about the same level as in 1978.

Mackenzie River system traffic, a large proportion of which is moved CN Rail to Hay River for transfer to river barges, remained at a much lower level than during the early 1970's but showed some improvement in 1979 over 1978. There is increasing activity in oil and gas exploration and development in the Mackenzie Delta, on the Beaufort Sea and at the Norman Wells. This activity is expected to continue to generate traffic in 1980.

CN Rail was involved with Foothills Pipelines (Yukon) Ltd., in transportation planning activities during 1979.

Canalog Logistics Limited, under contract from the Department of Indian Affairs and Northern Development, studied selected route and mode options for the transportation of base metal concentrates from the area east of Great Bear Lake in 1980.

After serving Canada's Northwest for over 30 years in the name of Canadian National Telecommunications, Northwest Telecommunications, Inc. (NorthwestTel) was incorporated and commenced operations in its own name early in 1979. It remains as one of the CN group of companies.

With headquarters at Whitehorse, the company provided public telephone, telegram, telex, data communications and mobile telephone service in a 2.35 million km² area which included Yukon, the western Northwest Territories and northern British Columbia. NorthwestTel rendered these services on a commercial basis and participated in providing non-economic services funded by the federal government as part of the Northern Communities Assistance Program.

Relocation of NorthwestTel's operating headquarters from Edmonton to Whitehorse, which commenced in 1978, continued in the summer of 1979 with the transfer of a further 21 positions. An accounting staff, remaining at Edmonton, will be transferred during 1980, substantially completing the move.

The Grande Prairie-Alaska microwave system was upgraded from 960 to 1800 voice channel capacity as far north as Whitehorse. Work is still progressing on upgrading the section between Whitehorse and the Alaska border, from 600 to 960 channels. In the Mackenzie Delta, the Parsons - Tuktoyaktuk radio system was upgraded from 60 to 300 voice channels.

The older, limited capacity electro-mechanical exchange at Porter Creek was supplanted by a 2000 line, fully expandable, computer controlled digital switching system. Only the second such installation in Canada, it represents the most advanced equipment available for commercial telephone traffic switching.

Both the local and long distance sections of the stored program controlled SP-1 switching centre at Whitehorse were expanded, adding capacity for 2 000 subscriber lines and 400 interconnecting and toll trunks. Other telephone exchange expansion projects were undertaken at Watson Lake, Cassiar, Elsa, Faro and Dease Lake.

Subscribers at the west coast community at Mile 92 on the Alaska Highway were transferred to a trunk concentrator for direct connection to the Wonowon exchange.

Local telephone service was provided to the community of Iskat, in northern British Columbia, using a Rurax expandable type exchange. Work commenced on the installation of equipment to bring long distance service to the community in 1980, through the Fort Nelson toll centre.

Thirteen additional exchanges were connected to the direct distance dialing (DDD) network, providing 96.2 per cent of NorthwestTel subscribers with the convenience of direct - dial long distance calling.

The temporary satellite ground station at Hay River, provided to furnish long distance connections to the remote communities of Holman, Sachs Harbour, and Snowdrift, was replaced by a permanent installation in 1979.

December 31, 1979

	Telephone Exchanges	Main Stations	Total Telephones
Northwest Territories	33	10 963	17 806
Yukon	18	8 844	14 404
British Columbia	12	3 530	5 526
Total	63	23 337	37 736

Plans for 1980-81

NorthwestTel plans a variety of projects to improve and expand its services during 1980-81. Civil work will commence on site preparation for a major upgrade and expansion of the Hay River to Fort Providence microwave system. Capacity will be increased from 960 to 1800 voice channels and an additional repeater will be introduced to eliminate fading problems experienced occasionally in adverse weather conditions.

The program to provide direct dialing capability at all community exchanges will continue. It is expected that 99 per cent subscriber access to DDD will be achieved in 1980.

Under the provisions of the Government of Canada's Northern Communities Assistance Program, work will begin to provide local and long distance telephone service to four small remote Northwest Territories communities - Lac La Martre, Rae Lakes, Nahanni Butte, and Jean Marie. This project is scheduled for completion in 1981.

Telephone exchanges at Beaver Creek and Teslin in Yukon will be replaced with larger units. Other telephone exchange expansion or replacement projects are scheduled for Rae, Edzo, Fort Liard, Fort Nelson, Mayo, Pine Point, Fort Franklin, Fort Norman, Port Radium, Haines Junction and Fort Resolution. Telephone service to the native community of Burwash, on the west shore of Kluane Lake, will be expanded and upgraded from limited capacity multi-party to fully available individual service. It will continue to be served from the Destruction Bay exchange for local switching and toll connection.

A 60 channel radio relay system will be commissioned to serve the community of Mayo, improving reliability and permitting the transfer of long distance circuits from an open wire pole line. ■

Canadian Transport Commission

CTC

Air Transport Committee

Responsibilities

The CTC licenses air carriers for commercial air services; provides economic regulation of air carriers; investigates and surveys operations and developments of commercial air services in Canada and advises the Minister of Transport on matters relating to civil aviation.

Review 1979-80

DEW Line contracts were awarded to Transair Limited for the vertical airlift (north-south) for the period October 1, 1979, to September 30, 1980, and to Nordair Limited for the lateral airlift (east-west) for the period October 1, 1979, to September 30, 1980. Supervision and coordination of these contracts continues.

Authorities Granted

Air North Charter and Training Limited

Amend a Class 4 and Class 9-4 in Groups A and B to include Group C authority, (limited to single engine aircraft in Group C); delete restriction in respect of Britten-Norman Islander aircraft, Group B, in Class 4 and Class 9-4.

Arctic Circle Flying Services Limited

Authority to operate a Class 4, Group B from a base at Cornwall Island, Great Bear Lake, NWT, restricted to transportation requirements of Arctic Circle Lodge and its associated outpost camps.

Bradley Air Services Limited

Amend a Class 3 in Groups C and D to permit permanent service to Repulse Bay, NWT; operate a Class 4, Group E using fixed wing aircraft from a base at Frobisher Bay, NWT.

Buffalo Airways

Authority to operate a Class 9-4, Groups A, B, C and D from a base at Fort Smith, NWT, Group D being restricted to the use of two DC-3 type aircraft; suspend for 30 days a Class 4 and Class 7 for violations in respect of licence conditions; reduce suspension to seven days with suspension limited to Group C aircraft.

Calm Air

Authority to operate a Class 4, Group C from a base at Rankin Inlet, NWT.

Coyote Air Services Limited

Authority to operate a Class 4, Class 9-4 and a Class 7, Group A aircraft from a base at Teslin, YT.

Fort Smith Air Service Limited

Suspend for one year the Group C authority under a Class 4 and a Class 7.

Frontier Helicopters

Authority to operate a Class 7, Groups A-RW, B-RW and C-RW from a base at Watson Lake, YT; transfer shares of Frontier Helicopters from Omineca Helicopters Ltd., to Conair Aviation Ltd.

Gateway Aviation Limited

Suspend for one year a Group D authority under a Class 4; transfer a Group C under a Class 4 and a Class 9-4 to Inuvik Coastal Airways Limited, with a restriction to the use of fixed wing aircraft and other conditions; suspend a Group D authority in Class 4 and Class 9-4; transfer of a Class 4, Group C from a base at Norman Wells, NWT, to Nahanni Air Services.

Husky Air Services Limited

Suspend a Class 4 and Class 7 as a result of violation of a condition of the licence.

Kenn Borek Air Limited

Lift suspension of a Class 4, Group D; lift suspension of Groups A and B authority under a Class 4 and Class 7 operated from Resolute Bay, NWT.

Lambair Limited

Lift suspension of a Class 4, Groups B and C authority operated from Rankin Inlet, NWT.

Latham Island Airways Limited

Amend a Class 4, Groups A and B (limited to 5 250 pounds in Group B) by deleting the restriction in Group B.

La Ronge Aviation

Suspend three Class 4 and one Class 7 authorities for one month as a result of a violation; reduce suspension to seven days in respect of Group C aircraft only.

MacKenzie Air Limited

Cancel a Class 4, Groups A and B authority operating from a base at Hay River, NWT, as a result of a violation of a licence condition.

Nahanni Air Services Limited

Amend a Class 4, Groups A and B by deleting restrictions on flights between the points Norman Wells, Fort Norman, Fort Good Hope and Fort Franklin for a period of six months.

Norcross Airlines Limited

Authority to operate a Class 4 using fixed wing aircraft in Groups A and B from a base at Ross River, YT.

Northward Airlines Limited

Cancel a Group D authority in a Class 3; amend a Class 2 by deleting a condition that prohibits non-stop services between Norman Wells and Inuvik, NWT.

North West Survey Corporation (Yukon) Limited

Amend a Class 7, Groups A, B and C by changing the base of operations from Whitehorse, YT, to Edmonton, Alberta.

North West Territorial Airways Limited

Authority to operate a Class 2, Group F to serve Yellowknife, Rankin Inlet and Frobisher Bay, NWT, for a two-year period, beginning January, 1980; amend a Class 9-4, restricted to the use of four propeller-driven aircraft in Group D, four in Group F and two Hercules aircraft in Group G.

Pacific Western Airlines

Amend a Class 2 by deleting a condition and specifying Groups F and G.

Polar Flying School

Cancel operating authority until further order as a result of violation of a condition of the licence.

Ram Air Charter Limited

Transfer a Class 4, operating from a base at Tuktoyaktuk, NWT, to Beaufort Flying Service Limited.

Richard Gwilym Bond

Cancel a Class 7 operated from a base at Whitehorse, YT.

Simpson Air Limited

Authority to operate a Class 4, Group A from a base at Fort Liard, NWT; suspension of a Group D under a Class 4 and Class 9-4 extended for one year; authority to operate a Class 7, Group B from a base at Fort Simpson; suspend a Group C until October 31, 1980.

Spur Aviation Limited

Amend a Class 7, Group A by adding Group B authority; suspend a Class 7 for 30 days, effective December 15, 1979, in respect of a violation of a condition of the licence.

Stan Reynolds Outfitting

Amend a Class 4, Group A authority to specify Dawson City, YT, as base of operations, with pick-up point at Mile 75 Dempster Highway; restricted to the travel requirements of the guests and employees of the company and its associated outpost camps.

Transair Limited

Transfer of commercial air services to Pacific Western Airlines; amend a Class 2 to restrict operations to Group E and F; amend a Class 3 by deleting the points Whale Cove, Repulse Bay and Chesterfield Inlet, NWT.

Trans North Turbo Air Limited

Authority to operate a Class 3, Groups A, B and C between the points Whitehorse, Faro, Ross River and MacMillan Pass, YT, renewed for two years; transfer a Class 4 and a Class 9-4 operating from a base at Mayo, YT, to Air North Charter and Training Limited; amend a Class 3 to include the points Tungsten, NWT, and Kluane Strip, YT.

Ursus Aviation

Authority to operate a Class 4, Group A from a base at Fort Norman, NWT.

Wien Air Alaska Inc.

Suspend a Class 8 serving the points Fairbanks, Alaska, USA, and Whitehorse, YT, for the winter.

Yellowknife Air Services Limited

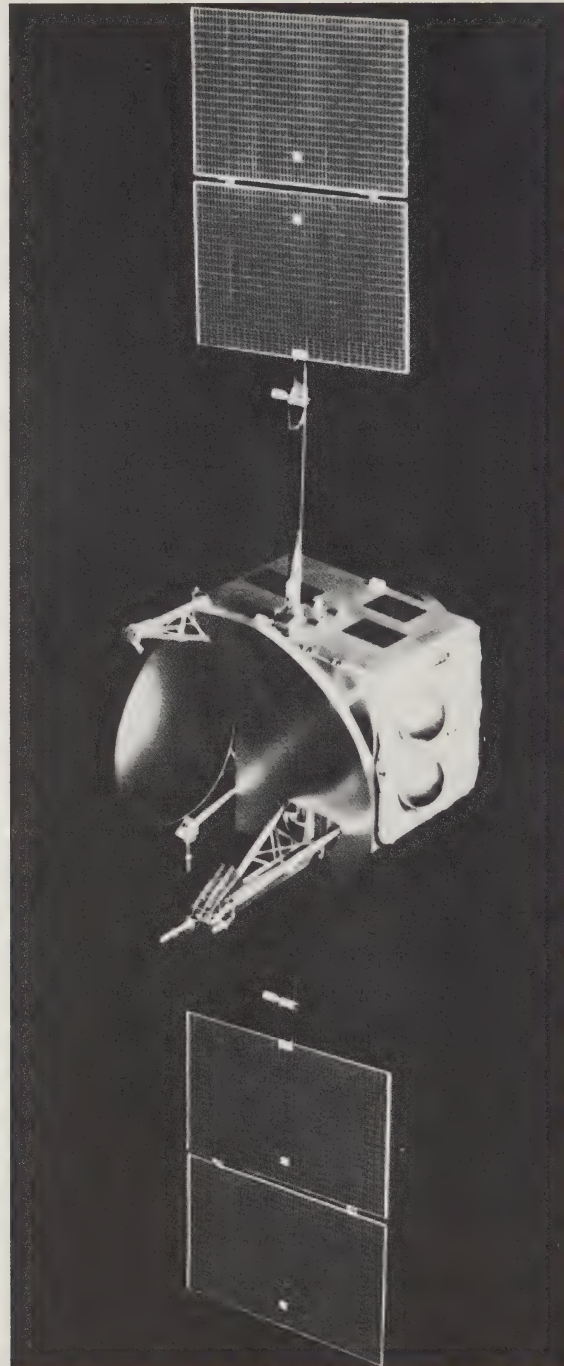
Authority to operate a Class 7 Groups A and B from a base at Yellowknife, NWT; suspend the Group B authority until April 30, 1980.

Yukon Northern Air Transport

Cancel a Class 7, Group A for violation of a condition of the licence. ■

Department of Communications

DOC



Experimental television programming is being carried out on the $1\frac{1}{2}$ GHz portion of this Anik-B Satellite.

Responsibilities

The Department of Communications, in fostering the development and operation of telecommunications for Canada, directs attention to the specific needs of northern Canadians. It endeavours to recognize these needs when developing national communications policies and programs. DOC promotes the development of efficient northern communication facilities and helps northern Canadians adjust to rapidly changing conditions. DOC continues to be involved in a number of activities in the North on both the experimental and operational levels.

Review 1979-80

The department, throughout 1979-80, was involved in experimental and operational activities in the North and participated in a number of joint ventures with other government departments and private groups.

The department is active in various arms of the Advisory Committee on Northern Development (ACND). It maintains its role as coordinator of northern communications planning.

A sizeable portion of the department's ACND involvement is administered through its committees in the two territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon is a member of the Federal Interdepartmental Coordinating Committee (FICC) in Whitehorse and chairs the Communications Subcommittee of the FICC. The DOC Central Region director is a member of the NWT Coordinating Committee in Yellowknife and chairs that committee's Standing Group on Communications.

The department continued to work closely with the Secretary of State on the Native Communications Program. DOC attended the annual meetings of the Secretary of State Native Communications Funding Program Coordinating Committees as a member of the Advisory Committee for Program Funding and Evaluation. During 1979-80, DOC officials in Ottawa were in frequent contact with the Secretary of State officials regarding extending the current NCP beyond July 31, 1980, and the development of a possible replacement program.

The department continued to give priority to northern native television and radio programming in the far and mid-north, both by the Canadian Broadcasting Corporation's Northern Service and independent native productions. In October 1979 an interdepartmental committee was established to investigate the issue of northern native television programming to support the cultural requirements of Canada's native peoples. The committee will prepare a number of options and budgets for discussion by government and native organizations at the national, regional and community levels. The committee, under the chairmanship of the DOC, includes the Department of Indian Affairs and Northern Development, the Department of Secretary of State, the CBC, the CRTC and the National Film Board. The working groups established under the interdepartmental committee are examining programming, training, equipment needs and the consultative process. Detailed work has been carried out on these issues to determine the CBC's role, the measures required to enable the CBC Northern Service to produce more culturally-relevant programming for and by native people, and the extent of direct federal support needed to establish independent native production enterprises.

The Department of Communications has maintained close working contact with the CBC Northern Service. Both DOC and CBC support more native television training and production. The CBC Northern Service opened its television production facilities in Yellowknife and produced 13 hours of northern programming. Eleven hours of additional Inuit programming were produced in the south for northern distribution and five hours of programming were purchased from northern native television production centres. The Yellowknife studio provided training for 24 native trainees.

The CRTC approved licences for five new broadcasting undertakings in 1979. Hay River, NWT, Broadcasting Society received a licence for an English language 32 watt community FM radio station. The Flat River Recreation Association in Tungsten received licences to operate an English language 10 watt TV rebroadcast station and an FM 18.45 watt station to rebroadcast CBC AM radio. A licence in Yellowknife for a 1000 watt AM radio station CJCP was granted to a group to be incorporated as the Charles A. Dent Co. In the Yukon, the CRTC granted an English language 5 watt TV rebroadcast licence to the Elsa Recreation Association in Keno Hill.

A special public meeting process was launched by the CRTC, March 25, to consider extension of services to remote communities as well as the related issues of satellite television services and pay-television. For the first time, a special committee was established with representatives from outside the CRTC. John Amagoalik of Frobisher Bay and Chuck Feaver of La Ronge, Saskatchewan, who have been active in native program production, are committee members. The committee held special meetings, prior to the main meetings in the National Capital Region, at Baker Lake, Northwest Territories, Whitehorse, Yukon, and Geraldton, Ontario, to facilitate the participation of northerners and obtain their ideas on how to obtain increased and more varied television services suitable to the North. One of the major contributors to the hearing process is the CBC Northern Service.

During 1979-80, Bell Canada established new satellite earth stations at Lake Harbour and Broughton Island. Bell also installed additional long distance circuits at Clyde River, Chesterfield Inlet, Repulse Bay, Whale Cove, Rankin Inlet, Igloodik, Lake Harbour, Baker Lake, Cape Dorset, Pond Inlet, Nanisivik, Pangnirtung, Sanikiluaq, Grise Fiord, and Hall Beach.

A new contract between Bell Canada and Telesat was signed in February, 1980, to continue expansion of satellite telecommunication services in the North. This contract replaced the original agreements between Bell Canada and Telesat which inaugurated commercial satellite service to the North in 1973.

In 1979, private communication service was provided jointly by Bell Canada and Telesat to the Esso Resources-Aquitaine Canada base camp on Brevoort Island, NWT, for about four months. A combination of telephone and teletype traffic was carried from Brevoort Island to Calgary and Toronto using a small air-transportable Telesat earth station at the base camp.

The policy of providing Inuit subscribers with facsimiles of their monthly bills in Inuktitut has now been operating successfully since early 1978. Bell also continues to distribute a trilingual telephone directory (Inuktitut, English, French), complete with maps and illustrations. The book uses, where possible, the special dialect of the communities involved.

In February, 1980, Broughton Island received the new DMS-10 S.D.O. - "Small Dial Office" machine - as part of a ten-year effort to replace older, less reliable switching equipment in the North. The "Small Dial Office" machine is one of a new family of entirely digital switching machines designed by Bell Northern Research and manufactured by Northern Telecom. The installation of this machine at Broughton Island was the first for an S.D.O. in such a remote location. The S.D.O. has a maximum capacity of 500 lines instead of 6 000 and is therefore less costly and better suited to the special conditions encountered in the far North. The machine will provide a more reliable service and, in addition, enable maintenance employees to do monitoring by satellite from Frobisher Bay. The installation of a satellite service at Broughton Island marked the end of high frequency radio telephones in the Northwest Territories.

The department, over the past year, has been involved in several experiments using the Anik-B satellite. These experiments have significant implications for the future of native programming and extension of basic television services in the far North. The Anik-B satellite, the world's first dual-band satellite, operates in both the conventional 6/4 GHz band and in the new 14/12 GHz frequency. DOC is leasing this high-frequency portion for two years for its pilot projects.

"Inukshuk" is the name of the project formulated by the Inuit Tapirisat of Canada with assistance from the federal Departments of Communications and DIAND. "Inukshuk" involves interactive communications and teleconference links to meet the particular needs of Inuit communities in the NWT. Satellite earth stations will be located in Eskimo Point, Pond Inlet, Cambridge Bay, Igloolik, and Baker Lake with the transmitter located at Frobisher Bay. The Inuit Tapirisat has established a production centre at Baker Lake and the studio in Frobisher Bay is expected to be in place by May, 1980. Tapirisat is working with the Pond Inlet Community Television Society (PIC-TV) to produce programming for the experiment and to purchase programming from Cambridge Bay and Eskimo Point.

The federal commitment to "Inukshuk" includes \$1.9 million through the Department of Indian Affairs and Northern Development to cover the costs of training, salaries, leasing and capital expenditures, travel, and general administration. The two-year leasing of the 14/12 GHz channels on Anik-B, with an option for three more years, will cost \$32 million, provided through DOC, including the launch. Other costs will add another \$4 million. DOC's Communications Research Centre and the Central Region are also providing professional and technical expertise and assistance throughout the project's period of operation.

The satellite-supported television operation will be used to link a number of communities permitting teleconferences, educational instruction, and general Inuit-language broadcasting. It is anticipated that a pool of Inuit, trained in the technical and production aspects of television, will then be available to produce northern native programming both in the CBC and through independent production centres.



In 1980, Broughton Island became the first northern location to receive the new DMS-10 - "small dial office" machine. This telephone installation was hailed as a "first" in the world of telecommunications.

A similar experimental project has been developed by Taqramiut Nipingat Inc., established to improve communications in northern Québec communities. The project, "Naalavik II", is currently under way in five communities: Sugluk, George River, Inujuaq, Great Whale River and Fort Chimo. Video transmission systems, linked by satellite, will be installed in these five communities to enable them to receive programming prepared by TNI's own production centre in Sugluk.

The third major Anik-B satellite experimental program which has direct relevance to the North involves the feasibility of delivering two channels of television programming via one satellite transponder and utilizing small 1.8 metre satellite ground stations. Because of the higher powered satellite transponder facilities, the system uses a new generation of low-cost receivers, thereby making this method of delivery suitable for rural and remote areas. Dishes, lent by DOC, have been installed by district office staff at Whitehorse, Johnsons Crossing and Eagle Plains, in the Yukon, and in Yellowknife, Fort Providence, Inuvik, Fort Simpson, Echo Bay and Norman Wells, NWT. Results so far have been encouraging as the difficulties inherent with the far North, such as weather conditions and the low angle of reception, have been overcome.

During 1979-80 there was continued expansion of the Central Region's participation in the shared program, Summer Job Corps, with the Department of Manpower and Immigration. Under the direction of the region's development section, 65 jobs in 25 northern communities were created. Sixty of these positions were filled by native people. The jobs created were heavily oriented toward community broadcasting. One job in Pond Inlet was geared toward film production to provide training and work experience that will assist native people in controlling rapidly-advancing media technology. The program also ran in Manitoba and Saskatchewan and for the first time was administered by the local district offices. Yellowknife and Fort Smith administered the NWT projects. The high rates of success attained indicate future programs of this nature will probably be handled directly from the northern offices.

These projects helped meet DOC's objectives of broadening the base of community resource people trained in communications. The long-term potential of this program is not only in the identification of new personnel but in reduction of unemployment and creation of new opportunities.

Central Region continued its Northern Community Local Agent Development project under the Economic Growth Component of Canada Works. This was developed because telephone service and repair is hampered by the lack of trained people in the communities. This program, with NorthwesTel, provides for the training of local agents by NorthwesTel to provide telephone service to northern communities at a level comparable to southern standards. This program also provides technical training to native people, thereby assisting them to cope with the high impact of telecommunications technology.

Bell Canada continued to recruit native employees. Three Inuit employees completed the Bell Canada Service Representative course given at Frobisher Bay.

The 1979-80 fiscal period saw a continuation of the federal government support for improved public telecommunications services in the Northwest Territories. Contributions to Bell Canada in the amount of \$1 508 800 provided for augmented service to the eastern arctic communities of Lake Harbour and Broughton Island and successfully concluded the Bell portion of the Northern Communications Assistance Program (NCAP). Northwest Telecommunications Inc. (NorthwesTel), a newly-formed subsidiary of Canadian National, received a contribution of \$362 000, which was the remainder of the \$889 000 approved to complete the modification of the tropospheric-scatter system between Hay River and Lady Franklin Point in preparation for further NCAP undertakings in the western NWT.

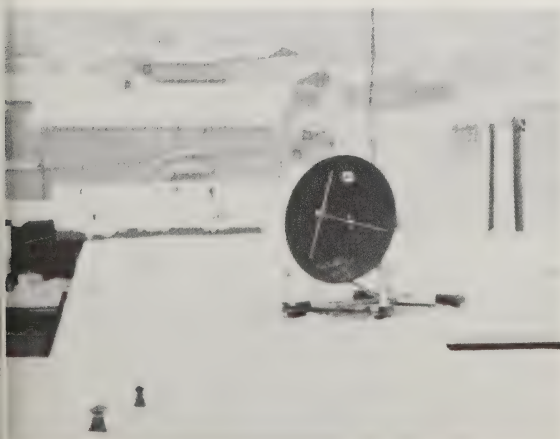
The Northern Communications Assistance Program, announced in January, 1977, to cost \$9 million, was reduced to \$7.2 million in federal contributions. These contributions cover the capital cost of communications facilities required to bring reliable long distance telephone service to the Northwest Territories. Bell Canada and NorthwesTel, the two telecommunication common carriers in the territories, are investing a similar amount for local exchange equipment. The long distance links are being provided by satellite ground stations or ground based circuits. NCAP does not affect the Yukon because all Yukon communities already have basic telephone facilities.

NorthwesTel has established in Whitehorse and is completing its staff relocation in the North. For additional information see section Northwest Telecommunications Inc. (CNR).

Another agreement, the Minimum Annual Revenue Guarantee (MARG), guarantees Bell Canada a minimum annual revenue in return for continued satellite telephone service to Chesterfield Inlet. The five-year agreement between Bell Canada and the Government of Canada was signed in December, 1976.

On March 29, 1980, a conference was held in Winnipeg on "Television in the Developing World". While not related directly to Canada's North, many of the topics discussed were of considerable relevance. The Winnipeg conference grew out of seven year's work on the impact and meaning of television among the Algonkian (Cree) in Manitoba.

The Department of Communications continues to be responsible for handling all aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, this service is provided by the district offices in Yellowknife, Fort Smith and Whitehorse. The Fort Smith Office also operates a monitoring station.



This experimental low-cost earth terminal is one of six now located in the Northwest Territories.

Plans for 1980-81

The Secretary of State's Native Communications Program will expire on July 31, 1980, and DOC will be involved in discussions regarding renewal.

The Department of Communications will continue to give priority to the development of more northern native programming. It is anticipated that the proposal on northern native programming, undertaken by the interdepartmental committee, will be finalized. The CBC Northern Services' proposals for extending programming services in the North will be given at the CRTC hearings in April, 1980.

The committee, established by the CRTC to look into extension of service to northern and remote communities, satellite television services, and pay-television, will issue a report on these topics. The commission will call for specific licence applications.

Bell Canada will continue its satellite circuit expansion program at the following existing NWT earth station locations: Broughton Island, Baker Lake, Chesterfield Inlet, Cape Dorset, Coral Harbour, Eskimo Point, Frobisher Bay, Hall Beach, Igloolik, Lake Harbour, Nanisivik, Pond Inlet, Pangnirtung, Rankin Inlet, Repulse Bay, Resolute and Whale Cove. Little Cornwallis Island (near Resolute) will be provided with satellite service during the summer of 1980. Service there will support the opening of a new lead-zinc mine on the island.

The Bell-Telesat private communication services provided to the Esso Resources-Aquitaine Canada base camp during the 1979 drilling season are expected to continue in 1980. The use of the transportable-temporary type satellite earth stations is becoming an increasingly attractive service for oil and mineral exploration companies operating in the NWT and other remote regions of Canada.

Financial restraints will likely delay the completion of the Accelerated Coverage Plan until 1982. The Plan, which commenced in 1974, was designed to provide CBC services to any community which had a population of more than 500. Six communities are now eligible for CBC service: Postville, Makkovik and Hopedale in Labrador and Gjoa Haven, Fort Franklin and Fort Good Hope in the Northwest Territories.

A community coordinator has been contracted as part of the "Inukshuk" project to organize participating communities on their interactive programming roles. During the coming summer, it is anticipated that the relocation of the Anik-B terminals - now in use elsewhere - to their northern locations will involve DOC personnel.

The shared Summer Job Corps program with Manpower and Immigration will be continued, primarily in community broadcast and film production. The Northern Community Local Agent Development Program, previously carried out in cooperation with Manpower, may be carried on with NorthwesTel as a Department of Communications project.

Four Inuit employees previously trained by Bell in basic installation, maintenance and repairs, will be sent to Montreal for advance training in May. Two new employees will be given the basic training course. In addition, Bell will be conducting a training course for service representatives in the fall.

The Bell Canada portion of the Northern Communications Assistance Plan has been completed, but further contracts with Northwest Telecommunications Inc. will continue to be developed. The MARG agreement, pertaining to Chesterfield Inlet service, will continue until it expires in December 1981. ■

Crown Assets Disposal Corporation

CADC

Responsibilities

Crown Assets Disposal Corporation is the federal government agency which sells surplus assets of federal departments and agencies. Many of these assets are sold from locations in the North. Under a long-standing agreement, sales of United States government surplus property, located at DEW Line sites and other northern establishments, are also carried out by Crown Assets. In addition, by agreement, the corporation is the agent of the Government of the Northwest Territories in the sales of its surplus assets.

Review 1979-80

The corporation sold Canadian and United States government surplus assets at many locations in the North. The vice-president of operations and two of the corporation's regional directors concerned with sales in the North visited DEW Line sites at Hall Beach, the major supply centre for the eastern arctic, and Cambridge Bay, the major supply centre for the western arctic.

Plans for 1980-81

A considerable quantity of heavy equipment, vehicles and other materiel remain to be sold for both the Canadian and United States governments. On-going marketing plans are being carried out to increase the awareness of the availability of equipment in the North. ■

Eldorado Nuclear Limited

NUCLEAR

Eldorado Nuclear Limited, the federal Crown corporation engaged in the exploration, mining and refining of uranium for generation of electricity, participated in four field exploration programs in the Mackenzie District of the Northwest Territories and the Yukon Territory during 1979-80.

Eldorado anticipates a similar level of exploration activity in fiscal year 1980-81. ■

Department of Energy, Mines and Resources

EMR



The main camp of the polar expedition LOREX-79, a multidisciplinary project to investigate the nature and origin of the Lomonosov Ridge.

Geological Survey of Canada

Responsibilities

The Geological Survey of Canada provides a comprehensive inventory and understanding of the geological framework of the country. Its activities include determining the mineral and energy resource potential available to Canada, carrying out studies on land capability, the geology of urban areas and conserving the natural environment.

Primarily it obtains information about the geological framework of Canada, its properties, evolution and development. Information on bedrock geology is obtained through surveys, regional studies and national compilations. This information is used for identifying resources and appraising non-renewable resources. Similar studies obtain information about the nature and evolution of the Canadian landscape, its surficial materials, terrain properties, processes, hazards and capabilities. This information is essential when evaluating energy and mineral resource development.

The Geological Survey also does resource identification and estimation. Estimates of the amount and quality of energy resources are made each year. Estimates for mineral commodities, because of the complex calculations involved, are made less frequently.

Review 1979-80

The earth sciences are of paramount importance to the economic health of Canada. The efficient exploitation of Canada's many mineral resources requires a solid base of knowledge of mineral and fossil fuel occurrences. The projects of the Geological Survey in 1979 in the North and elsewhere were directed to meet this objective.

Preliminary results of the 1979 field season were released in *Current Research, Part C* (November, 1979) and *Current Research, Part A* (February, 1980). The former contained four items on the North, the latter 16.

In 1979 a multidisciplinary study of Late Precambrian sedimentary rocks and subjacent gneisses was carried out in the region of Fury and Hecla Strait. The study of the sedimentary rocks is part of a continuing study of redbeds. The study of the granitic gneisses is part of an international study of granites, jointly sponsored by the Nuclear Energy Agency and the International Atomic Energy Agency. The study is designed to establish criteria that will help recognize granitoids of economic value. The area was chosen for study because the nonconformity separating the gneisses and sediments is similar in age to the sub-Athabasca nonconformity in Saskatchewan which has produced uranium. Earlier airborne surveys done as part of the Canadian Uranium Reconnaissance Program had disclosed large-scale radiometric anomalies. The study showed that the anomalies are caused by underlying granite. Their proximity to the nonconformity is significant for mining exploration. On the basis of the results of the radiometric survey the area has already attracted considerable attention from the mining industry.

As planned, a third season was devoted to the study of the more than 5 600 m of late Proterozoic sedimentary rocks of northern Baffin and Bylot Islands. This study is designed to establish relationships between these strata and the underlying basement gneisses and to supply data for comparison and possible correlation of strata of west Greenland and arctic Canada. Mapping of Foxe Fold Belt in north-central Baffin Island concluded. The area has economic significance, particularly for iron and base metals. The results of this five-year study will help unravel the complexities of the geology. The Circum-Ungava Belt extends from the Cape Smith Belt through eastern Hudson Bay to the Belcher, Ottawa, and Sleeper Islands. The presence of ultramafic lava flows in the Cape Smith Belt, which have potential economic significance, prompted a study undertaken last summer.

In the Mackenzie and Keewatin Districts work continued on numerous projects. Reconnaissance mapping of Hill Island Lake began in 1979 and is designed to provide an up-to-date geological framework at the scale 1:250 000. The forest fires that plagued the region severely hampered work but preliminary observations were made at scattered localities. Much of the area is currently being prospected for uranium. Galena occurs on the south shore of Thekulthili Lake and molybdenum was found on the west shore of Tsu Lake. Work was started on mapping the Anialik River greenstone belt in Hepburn Island map area at a scale of 1:50 000. Healy Lake map area contains the Thelon Front, the boundary between the Slave and Churchill geological provinces. Mapping of this area, begun in 1978, was continued at a scale of 1:250 000. Mapping continued in Tebesjuak Lake map area in Keewatin. Numerous uranium occurrences related to Dubawnt Group sedimentary rocks are reported. In addition to these, occurrences of copper, lead, zinc and cadmium were noted.

Work continued on stratigraphic correlations in the Arctic Islands through the study of conodonts from four wells from the Lower Paleozoic succession. An organic geochemical study of oil from the Dome Hunt Nektoralik K-59 well in the Beaufort Sea indicates that the section is thermally immature and that the oil was derived from rocks similar to the source for the oil and gas condensates at Taglu and Niglitgak wells.

The Geological Survey participated in LOREX, an EMR multidisciplinary experiment conducted from drifting ice over the Lomonosov Ridge in the Arctic Ocean. The ridge appears to consist of an echelon fault block covered by a thin veneer of unconsolidated sediments currently undergoing erosion.

Remapping of Laberge and Carmacks map areas in central Yukon was begun. The region had first been mapped more than 50 years ago. Since then much new information has become available on the geology of the northern Cordillera. Feldspar porphyry bodies within Laberge area contain several copper occurrences. These rocks elsewhere are known to contain vein and disseminated gold occurrences and porphyry molybdenum accumulations. A study of the Selwyn basin was commenced in the Nahanni map area. The area contains the stratiform lead-zinc Howard's Pass deposit and the Vulcan lead-zinc-iron massive sulphide and associated fluorite deposit. The present study is examining the stratigraphic position of these to provide a mineral exploration guide.

The nature of the flora and the relationships between plant communities and the surficial materials on Loughheed Island were studied during July and August. This study forms part of the Geological Survey's ongoing assessment of the susceptibility of the fragile arctic environment to man's activities. The study was carried out in conjunction with mapping. Over much of the Loughheed Island glacial, glaciomarine, fluvial and eolian materials cover the underlying Cretaceous rocks. Soil development is minimal and the plants are rooted directly in unaltered or physically weathered material. Ice-wedge polygons are widely distributed in areas of continuous permafrost. In tundra regions they are commonly referred to as low-centred or high-centred depending on whether they are saucer or dome shaped. Ice-wedge polygons are of broad interest because of their widespread distribution, sensitivity to natural and artificial disturbances, and extensive use as paleoclimatic indicators. The study of these features continued at the Garry Island test site where, in 1966, 25 steel tubes had been inserted into holes in an area of low-centre polygons. The study shows that thermally induced deformation occurs in the active layer, probably as a result of summer expansion, and that similar expansion probably occurs on hillslopes and thus is a significant contributor to downhill movement.

At some sites along the Mackenzie River the frequency with which the ice reaches a given bank elevation can be determined using tree age, and areas subject to disastrous flooding or ice over-riding can be assessed. Studies on this phenomenon were carried out between Fort Simpson and Norman Wells.

Plans for 1980-81

Of the 440 projects to be carried out by the Geological Survey of Canada in 1980-81, 142 will involve work in areas north of 60°, and 58 of these will have a field component in 1980-81.

Several field projects will be undertaken in Yukon and the adjacent District of Mackenzie to obtain data essential in the investigation of new concepts on the geological evolution of the Cordillera. The data will assist in determining the controls of mineral deposits. The integrated project in the Nahanni map area, prompted by the interest in the shale-hosted lead-zinc deposits of the Selwyn basin, will include: completion of 1:250 000 scale bedrock mapping; detailed studies of Cambrian and Ordovician-Silurian biostratigraphy; the economic geology and geochemistry of the mineral occurrences and their host rocks; a terrain inventory and mapping of the surficial deposits. In the adjacent area to the northwest a sedimentological and stratigraphic study of the lower Paleozoic basin-to-platform relationships will continue. In the Mackenzie Mountains, to the northeast, minor work will investigate the Rapitan Group and large landslides. The coal deposits of the Bonnet Plume basin will be studied in detail and sampling will be undertaken to establish biostratigraphic zoning. To assist in improving stratigraphic correlation in the Ogilvie Mountains and central Yukon four field parties will continue biostratigraphic studies of Cambrian, Devonian, lower Carboniferous, and Mesozoic-Jurassic sections. The Devonian sections along the south shore of Great Slave Lake will be studied briefly. A short field season should complete the regional mapping in the British and Barn Mountains, a study of the structural geology of northern Yukon, and a gravity survey in the Norman Wells area. The logistics provided by other GSC field parties, and in some places by exploration companies, will be used to study the mineral deposits. Particular attention will be on copper-molybdenum in the southern Yukon, the lead-zinc in the Selwyn Basin, uranium in the Englishman Range and Tombstone Mountains, as well as the regional metallogeny of the northern Cordillera near Dewhurst, Duo and Bonnet Plume Lakes. Field work in the Old Crow Basin will be limited to Quaternary stratigraphy and sample collections of late Cenozoic fossil insects.

Laboratory investigations, office compilations and report writing will be undertaken on 16 other projects. Bedrock geology studies will include major efforts to complete reports on Operations Stewart, Norman and Porcupine, the upper Paleozoic rocks of B.C. and Yukon, the biostratigraphy of the Mesozoic rocks of B.C. and the Yukon, the stratigraphy, sedimentation and diagenesis of the Paleozoic rocks in the southern Mackenzie Mountains, and the Mt. St. Elias area. The demands of environmental assessment work have delayed several reports on the Quaternary geology and terrain inventory but it is hoped that progress will be made on reports on Aishihik Lake, Mayo-McQuesten, and southwest Yukon.

Studies of the Precambrian rocks of the Districts of Mackenzie and Keewatin are directed toward obtaining a better understanding of the geologic history and the origin of the mineral deposits. Field work in the area of the Hepburn batholith will assist in evaluating the tectonic model being developed for the Bear-Slave geological province. It includes 1:250 000 mapping, a detailed study of the Akoitcho Group, and a regional seismic investigation of the overlying sediments and basement. Geological mapping at a scale of 1:250 000 near Beechey and Duggan Lakes and Healy Lake, in east central Mackenzie, along with a study of the Archean felsic volcanics, will help understand the nature of the Slave-Churchill boundary. Field work in the Fort Smith map-area will focus on the delineation of faults and mylonite zones in the intrusive and metasedimentary rocks. In the Dubawnt Lake-Baker Lake area of central Keewatin, where considerable exploration for mineral resources is under way, 1:250 000 scale mapping will be carried on in three map-areas and two detailed studies undertaken northwest of Baker Lake. The regional metallogeny of the Cambrian Shield will be examined southeast of Great Slave Lake, near Nonacho Lake. The greenstone belt east of Yellowknife, the Bathurst Inlet area, and north of Baker Lake near Amer Lake will also be examined. A heavy mineral geochemical survey will be carried out at McInnis Lake. The effect of tracked vehicles on the environment will be investigated at exploration company field areas near Lone Gull Lake, Baker Lake, and Yathkyed Lake. The study of soil movement, site instrumentation and sample collection near Henik and Kaminak Lakes will assist in the study of periglacial processes. Office and laboratory work will include 25 additional bedrock projects and nine terrain projects. The bedrock projects are on map areas closely related to those with field work for 1980-81. A better understanding of the geologic history of the Bear Slave geological province will result from reports being prepared on the Kilohigok basin, the Coronation Gulf, Nose, Beechey and Indian Lakes, Yellowknife-Hearn Lake, Keskarrah Bay, Great Slave Lake, Sloan River, Calder River, and Bear Batholith map-areas. Reports are also in preparation on Archean volcanic rocks, the Nonacho Group and granitic rocks. The preparation of reports and geological maps of the Tulemalu Lake, Amer Lake, MacQuoid Lake, and 30-Mile Lake, southeast Baker Lake, and Daly Bay areas will bring geological knowledge to acceptable standards. Three terrain projects are for environmental assessment of the proposed Mackenzie Highway and pipeline route through eastern Keewatin.

Mesozoic stratigraphy and basin analysis of the eastern Sverdrup basin will be studied on southwest Ellesmere and southeast Axel Heiberg Islands. The structural geology and tectonics of the Inuitian fold belt will be the focus of a geological mapping party. The stratigraphy and paleontology of the Upper Paleozoic rocks of Ellesmere and Axel Heiberg Islands will be examined at the same time. The reconnaissance mapping of northern Ellesmere Island and the stratigraphic study of Devon Island should be completed this field season. The search for energy and mineral resources in the Arctic Islands will be aided by this field, laboratory and office work.

The reconnaissance mapping of the Precambrian rocks of Devon Island should be completed early enough to permit minor field work on the comparison with exposures in northern Greenland. If logistics can be arranged the lead and zinc deposits of northern Baffin Island will be examined. Extensive office and laboratory work should complete reports on several areas of Precambrian rocks.

Four field projects will be concerned with the Quaternary geology, its relationship to the effects of exploration and development on the environment. The terrain inventory and the relation of vegetation distribution to surficial materials on Dundas Peninsula of Melville Island will be examined by field parties. The continuing study of rock heave will require about two weeks field work at Drake Point on Melville Island and Fiona Lake, Somerset Island. Further definition of the Quaternary geochronology will result from collecting lake sediment cores on east central Ellesmere Island from Backe Peninsula to Cadogan Inlet. Office and laboratory studies will complete reports on the Quaternary geology and terrain inventory of Boothia Peninsula, Somerset and Prince of Wales Islands, Bathurst, Cornwallis and eastern Melville Islands, central Ellesmere Island, Ringnes Islands, Banks Island, and northern Baffin and Bylot Islands. Further laboratory and office work will be undertaken on fluvial and mass wasting on Banks Island and slope processes and cryogenic movements in the Arctic Islands.

The examination of the seismic properties of permafrost in the Beaufort Sea, between Herschel Island and Baillie Islands, will continue. This information is vital to exploration and production of offshore petroleum resources. The surficial geology and geomorphology of the Mackenzie Bay-continental shelf area will be investigated. The geomorphic processes of the coastal zone of the Tuktoyaktuk Peninsula and Darnley Bay and Franklin Bay will be studied.

A marine geology cruise on the eastern Baffin Island shelf and a multiparameter geophysical cruise in northern Labrador Sea and Davis Strait will extend geological knowledge.

A reconnaissance survey of the coast of Bylot Island and northern Baffin Island will be undertaken to provide advice for future development or environmental problems such as oil spills.

An airborne aeromagnetic survey of the continental shelf off Ellesmere Island will be carried out in April. Compilation and interpretation work will continue on a magnetic anomaly map of the arctic north of 60°.

Laboratory and office work on surface and subsurface samples from the Mackenzie Delta and Beaufort Sea will be continued.

Reports and maps, relating to the Northwest Territories and Yukon Territory, were published by the Geological Survey in 1979-80. Some titles have been abbreviated.

Memoirs

387 Mesozoic and Tertiary geology of Banks Island, Arctic Canada - The history of an unstable craton margin; Andrew D. Miall; 235 p.

Bulletins

298 The evaporites of the Ordovician Baumann Fiord Formation, Ellesmere Island, Arctic Canada; Grant D. Mossop; 62 p.

299 Eurasian craspeditid genera *Temnoptychites* and *Tollia* in the lower Valanginian of Sverdrup Basin, District of Franklin; J.A. Jeletzky; 89 p.

303 The Holocene marine environment of the Beaufort Shelf; G. Vilks, F.J.E. Wagner and B.R. Pelletier; 43 p.

308 Lower Devonian (Lochkovian) biostratigraphy and brachiopod faunas, Canadian Arctic Islands; R.E. Smith; 155 p.

312 A trilobite zonation of Middle Ordovician rocks, southwestern District of Mackenzie; by Rolf Ludvigsen; 98 p.

Papers

77-31 The lithogeochemistry of the Keno Hill District, Yukon Territory; C.F. Gleeson and R.W. Boyle; 19 p.

78-22 Lower Cretaceous and Jurassic rocks of McDougall Pass area and some adjacent areas of north-central Richardson Mountains, northern Yukon Territory and northwestern District of Mackenzie; J.A. Jeletzky; 35 p.

78-23 Eleven stratigraphic sections from the Lower Cambrian of the Mackenzie Mountains, northwestern Canada; W.H. Fritz; 19 p.

79-1B Current Research, Pt. B; contains 43 short scientific reports, and 10 scientific and technical notes of which 19 are concerned with the North.

79-1C Current Research-Recherches en cours, Pt. C; contains 14 short scientific reports and six scientific and technical notes of which four are concerned with the North.

79-8 Stratigraphy and sedimentation in the Helikian Elu Basin and Hiukitak Platform, Bathurst Inlet-Melville Sound, Northwest Territories; F.H.A. Campbell; 18 p.

79-9 Tertiary fluvial sediments in the Lake Hazen intermontane basin, Ellesmere Island, Arctic Canada; Andrew D. Miall; 25 p.

79-14 Transported cataclasite, ophiolite and granodiorite in Yukon; evidence of arc-continent collision; D.J. Tempelman-Kluit; 27 p.

79-19 New stratigraphically and phylogenetically important olostephanid (Ammonitida) taxa from the uppermost lower and upper Valanginian of Sverdrup Basin, NWT; E. Kemper and J.A. Jeletzky; 25 p.

80-1A Current Research-Recherches en cours, Pt. A; contains 49 short scientific reports and 14 scientific and technical notes of which 16 are concerned with the North.

Maps

4-1978 Surficial geology and geomorphology, Mirror Creek, Yukon Territory; Scale 1:100 000.

5-1978 Surficial geology and geomorphology, Koidern Mountain, Yukon Territory; Scale 1:100 000.

6-1978 Surficial geology and geomorphology, Burwash Creek, Yukon Territory; Scale 1:100 000.

7-1978 Surficial geology and geomorphology, Generec River, Yukon Territory; Scale 1:100 000.

8-1978 Surficial geology and geomorphology, Congdon Creek, Yukon Territory; Scale 1:100 000.

Aeromagnetic Maps

Scale 1:50 000

36 maps - Lat. 64°45' to 65°30'; Long. 112°00' to 118°00'

38 maps - Lat. 65°00' to 67°00'; Long. 118°00' to 120°00'

Scale 1:250 000

Map 7877G - Leith Peninsula (NTS 86E) Lat. 65°00' to 66°00';

Long. 118°00' to 120°00'

Map 7899G - Takaatcho Riv. (NTS 86L) Lat. 66°00' to 67°00';

Long. 118°00' to 120°00'.

Airborne Gamma Ray Spectrometer Surveys

Scale 1:250 000

8 maps in Baker Lake Area;

9 maps in Great Bear Lake-Coppermine Area.

Earth Physics Branch

Responsibilities

The Earth Physics branch provides geophysical information on the configuration, evolution, structure and dynamic processes of the solid earth and hazards associated with geophysical phenomena of the Canadian landmass. The branch has three divisions: Seismology and Geothermal Studies, Geomagnetism, and Gravity and Geodynamics. Within this framework, five services carry out the mandate of the branch, including operations north of 60°.

Seismological Service

Responsibilities

The Seismological Service determines the parameters of all significant earthquakes in northern Canada and provides assessments of earthquake risks. Research on the structure and properties of the arctic lithosphere is conducted by deep-sounding experiments, surface wave dispersion studies and studies of seismic wave velocities from arctic earthquakes. Studies of earthquakes provide data for investigations of seismotectonic processes and for earthquake-resistant design. A network of seismograph stations is maintained in northern Canada and field experiments on deep seismic sounding are conducted.

Review 1979-80

Standard seismological observatories were operated at Alert, Mould Bay, Resolute, Frobisher Bay, Inuvik and Yellowknife and regional observatories continued operation at Baker Lake, Whitehorse and Igloolik. The three regional seismological observatories in the southwestern Yukon, near Dezadeash, Kluane Lake and Koidern, established in a joint venture with Foothills Pipe Lines (South Yukon) Ltd., monitored low level seismicity in the region of the proposed pipeline route. The Yellowknife seismological array continued operation. The automatic data transfer facility continued to send digital information on seismic events to the Ottawa computer. Seismic data on global events are relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. The Yellowknife detection bulletin is transferred by computer link to research groups in the U.S. and U.K.

Routine analysis of all detected earthquakes in and near the Canadian North continued. Bimonthly lists of all earthquakes were prepared within about six months of their occurrence and final findings were published. Rapid determinations were made of earthquakes of special scientific interest, such as the magnitude five earthquakes near the Boothia Peninsula on June 27, 1979; in the Mackenzie Mountains on July 11, 1979, and in the Beaufort Sea on December 4, 1979. In-depth research on the February 28, 1979, magnitude 7.3, St. Elias, Alaska, earthquake has been completed.

The southwestern Yukon studies, a three-year project initiated in 1978 to assess the seismicity in relation to geological features along the ALCAN pipeline route, have shown the earthquakes well separated into zones that correlate with the two major fault systems. A six-week microearthquake survey was conducted in the autumn of 1979 along a 40 km portion of the Denali fault, near the south end of Kluane Lake.

Research on seismic risk in northern Canada continued. The region north of 60° was divided into 12 earthquake zones. Similar information for adjacent regions of Alaska was compiled to include the contributions of Alaskan earthquakes to risk in Canada. New relations for the attenuation of strong seismic ground motion have been derived for applications to risk mapping.

Two seismic refraction profiles of about 150 km in length were obtained during EMR's Lomonosov Ridge Experiment (LOREX), March - June, 1979. These data indicate that, in the area of the North Pole, the Lomonosov Ridge is composed of mainly oceanic type rocks with a depth extent to the crust-mantle boundary of about 27 km sub-sea. The adjacent basins have different structures with the crust-mantle boundary occurring at 12 km sub-sea beneath the Makarov Basin and 16 km sub-sea beneath the Fram Basin.

Plans for 1980-81

The present seismological observatories and the Yellowknife seismological array will be maintained. These facilities will continue to contribute data to Canadian and international research programs.

Analysis and publication of earthquakes occurring in northern Canada will continue. Detailed studies of the larger Canadian earthquakes will continue as data and records become available. Studies of low magnitude earthquakes in the southwestern Yukon, in the vicinity of the proposed ALCAN pipeline route, will continue.

The earthquake-zone seismicity model, developed for northern Canada and adjacent regions, will be utilized to derive seismic risk maps displaying a number of strong seismic ground motion parameters at a range of risk levels. These maps will provide more comprehensive seismic ground motion information than previously available for earthquake-resistant design of critical facilities (pipelines, exploration wells, etc.) in the North.

A new project will commence to assess the seismotectonics and seismic risk on the northern continental margins. The study will start with a review of the seismicity and its relationship with geological and geophysical features in the Labrador Sea and adjacent continental slope. As more definitive information on this and other regions becomes available, a reassessment will be made of seismic risk.

Geothermal Service

Responsibilities

The Geothermal Service provides information on the thermal regime of the Canadian landmass as related to geotectonics, permafrost distribution and characteristics, the potential for geothermal energy development and the thermal properties of earth materials. Field measurements of subsurface temperatures and laboratory measurements of the thermal and heat generation properties of earth materials form the data base.

Review 1979-80

The investigation of the structure and origin of the Arctic Basin and islands received more prominence than in recent years by the participation of service personnel in the multidisciplinary Lorex-79 expedition. Over a period of two months, 42 heat flow determinations were made; 22 in the Makarov Basin, 10 on the Lomonosov Ridge and 10 in the Fram Basin. The measurements of temperature gradient in the sea-bottom mud at water depths of 1.6 to 4.2 km were made with a new recording probe developed in Canada.

The acquisition of temperature data from deep northern boreholes continued with reduced emphasis. The results of additional observations conducted in the Arctic Islands and Mackenzie Delta were published in an open-file report.

Analysis of subsurface temperatures and heat flows for a group of mining drill-holes in northern Quebec provided information on the thermal history and stability of the 500 m thick permafrost layer. The results have been used to test models of climatic history and theories.

The possible occurrence of natural gas in and below the permafrost, both on and offshore, is of increasing concern to northern drillers. The possible presence of hydrate occurrences beneath the Labrador Shelf was evaluated. Several small contracts were initiated with universities in 1979 to measure physical and geophysical properties of gas hydrates.

Studies of the shallow thermal regime of permafrost continued through field programs at Alert, northern Ellesmere, Illisarvik, and along the route of the proposed Alaska Highway pipeline. At Alert, the most northerly permafrost monitoring site in the world, observations of temperature, snow cover, density and thickness have continued in five boreholes to depths of 60 m for a period of 18 months. Several reports have been published on the results to date. An additional 10 holes are hydraulically drilled and instrumented to depths of 30 m at the Illisarvik site. The lake-bottom is being used as a large-scale experiment to understand permafrost processes.

Studies of the stability of permafrost continued. Evidence collected to date suggests that changes of 1 to 2°C in ground temperatures over a time span of 40 years are not unusual. Such temperature changes will have dramatic effects in permafrost landscapes, reactivating thaw ponds, ice wedges etc. Shallow drillholes at several northern sites, including sites at Alert and in the Yukon, are seeking to establish these natural long-term variations.

Through funding from the Energy Research and Development Program, a number of small contracted projects were initiated during the year to investigate moisture conditions of permafrost.

Plans for 1980-81

The program of geothermal studies will continue to keep pace with the needs of increasing resource development. Investigations of moisture migration processes and gas hydrate properties will be continued. Field investigations at the Illisarvik drained lake site and in the Yukon will enhance the laboratory experiments on moisture migration and permafrost growth. A major effort will be made in 1980-81 to visit deep northern wells not logged in 1979-80. A number of these wells will be plugged at the surface thus completing the observation program.

Through cooperation with Foothills Pipe Lines Ltd. several 30 m additional holes near the Alaska Highway will be prepared for ground temperature studies. A significant 1980 summer effort will be made to obtain additional deep sub-surface temperature information.

International contacts with permafrost and hydrates groups will be maintained and strengthened.

Geomagnetic Service

Responsibilities

The Geomagnetic Service provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information on many other maps, including aeronautical and marine charts, concerning the angle between true north and magnetic north and its change from year to year. The division, through surveys and analyses of large-scale anomalies in the magnetic field, provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys. The magnetizations acquired by rocks at their initial formation and during their subsequent history are analysed to learn when and how geological structures were formed. Knowledge of the evolutionary process is important in understanding where fossil fuel and mineral deposits might be located.

The Geomagnetic Service records and analyses rapid variations of the earth's field. Eleven magnetic observatories record these changes continuously in Canada. The rapid magnetic variations provide information on electric currents in the ionosphere and on the physical properties and dynamic behaviour of the magnetosphere. These studies have practical applications in the North in the fields of telecommunications, transmission of electric power, and the investigation of deep crustal structure by electromagnetic induction.

Review 1979-80

Magnetic observatories operated continuously through 1979-80 at Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording magnetometers provided data in digital form at Alert, Pelly Bay, Rankin Inlet and Eskimo Point as part of the *Churchill Chain* of stations contributing to the International Magnetospheric Study 1976-79 (IMS). Two repeat stations at Frobisher Bay and Whitehorse provided information on the secular change of the earth's magnetic field for updating of marine and air navigation charts. Laboratory investigations were made of the natural magnetization of oriented rock samples collected from Prince of Wales Island. Magnetotelluric recordings and magnetic gradiometer measurements were made over a six-week period on the sea ice near the North Pole. This work was part of the LOREX program.

Plans for 1980-81

The five magnetic observatories will operate throughout 1980-81 but the four IMS recording stations in the NWT will cease operation on June 30, 1980. In the continuing program of secular change studies magnetic repeat stations will be reoccupied at Dawson City, Inuvik, Norman Wells and Ennadai. Oriented rock samples for paleomagnetic research will be collected on Prince of Wales Island and Cornwallis Island.

Gravity Service

Responsibilities

The Gravity Service provides data and information concerning the regional gravity field of the Canadian landmass and offshore regions. Precise observations of gravity provide basic data for the mineral and oil exploration industries, for studies of sedimentary basins and for studies of the earth's crust and upper mantle. In addition, these observations provide data for geodetic studies. The service establishes gravity standards throughout Canada by maintaining a first-order network of gravity stations. The service also maintains a bank of all gravity data.

Review 1979-80

About 700 gravity stations were observed in the vicinity of the North Pole as part of the Lomonosov Ridge Experiment (LOREX 79). More than 250 of these observations were made on the frozen surface of the ocean. An additional 400 line km of gravity profiling were collected using instrumentation installed at three ice island camps which drifted across the Lomonosov Ridge.

Part of eastern Hudson Bay between the Ottawa Islands and the mainland was surveyed by contract. Helicopters were used to establish a grid of 429 gravity stations on the frozen surface of the bay.

In the Yukon, about 750 gravity observations were made at 1 km intervals along the Dempster and 60 Mile Highways. This survey formed part of a larger survey done in support of a project of Surveys and Mapping Branch.

Two reports on Arctic ocean tectonics were completed. In one report evidence was presented to suggest that the Fletcher abyssal plain, which lies between the Alpha and Lomonosov Ridges, may have been produced by seafloor spreading and that the Alpha Ridge may be a fragment of continental crust. The second report focused on the polar continental margin of North America and reviews geophysical and geological data collected along this zone. This information helps interpret the probable sequence of Phanerozoic tectonics that affected the region of the polar boundary before and after its inception.

Reports describing the correlation between gravity anomalies and the Belcher foldbelt of eastern Hudson Bay and the Yellowknife greenstone belt, Northwest Territories, were also completed.

Plans for 1980-81

Gravity surveys on the ice in the littoral zone of southwestern Hudson Bay and in M'Clintock channel will be extended. The gravity service will also contribute to the development of a scientific and operational plan for the proposed Canadian Expedition to Study the Alpha Ridge (CAESAR 82).

Studies of the crustal structure of the Sverdrup Basin and Lincoln Sea-Nares Strait areas will be continued. Data collected in 1979 across the Lomonosov Ridge will be analyzed and interpreted.

Geodynamics Service

Responsibilities

The Geodynamics Service provides data and information leading to a better understanding of the dynamics of the solid earth and associated natural and induced geophysical hazards. It also provides data on the crustal deformation, earth rotation and polar motion of the Canadian landmass.

Review 1979-80

The Earth Physics Branch and the Polar Continental Shelf Project coordinated a multidisciplinary geophysical and oceanographic polar expedition, LOREX-79, to investigate the nature and origin of the Lomonosov Ridge. Some 15 different studies were successfully conducted by 38 scientists and technicians from EMR, Fisheries and Oceans and five universities. They covered geodetic measurements, bathymetry, gravity, seismic, heat flow, geomagnetism, marine geology, CTD and current measurements, and chemical analysis of the water column. At the end of the operation all equipment was safely taken off the ice. Preliminary results from sediment cores and dredged rock samples indicate that in Cretaceous time the Lomonosov Ridge was part of the Barents continental shelf. It is theorized that it was rafted to its present position by the seafloor spreading process. Bottom current measurements and sea floor photographs suggest that it is presently being eroded by pulsating bottom currents.

Plans for 1980-81

A preliminary proposal for a multidisciplinary survey, CAESAR-82, of the Alpha Ridge in the Arctic Ocean will be prepared. This proposal will lay the ground work for a major experiment to be conducted in the spring of 1982.

Canada Centre for Mineral and Energy Technology

Review 1979-80

CANMET evaluates micro-alloyed steels for use in northern gas and oil pipelines. Studies have been made into the effect of composition on mill and field welds, the level of residual stresses near welds, the effect of micro-structure on mechanical properties, the resistance to brittle fracture and corrosion. The effects of molybdenum and niobium on the hot-working of line-pipe steels have been studied and a model based on a system analysis approach has been developed for predicting the reliability of pipelines.

Atmospheric tests in the arctic on some 50 samples of various steels, show that the corrosion rate is low, except in coastal areas where corrosion rates are as high as in southern Ontario and Quebec.

CANMET is doing research to develop alloys with improved impact strength for ships operating in heavy ice. Aluminum bronze propeller alloys are being studied to determine the effect of cast section size and heat treatment on strength and impact properties to maximize strength and ductility without impairing corrosion resistance, strength or weldability.

Plans for 1980-81

CANMET will research the feasibility of using cheaper microalloy compositions for Grade 70 line-pipe steel. Studies will continue on the tolerance of line-pipe to damage during installation to provide a rational basis for safety inspection standards.

Current specification tests for fracture toughness will be evaluated and compared with newly-developed instrument impact tests. Line-pipe steels being considered for application in northern pipelines will be assessed for susceptibility, to stress corrosion cracking and sulphide stress cracking.

An ultrasonic scanner is to be designed, built and tested for measuring the depths of fatigue cracks in crude oil pipelines. Non-destructive examination methods will be assessed for an automated apparatus to determine the presence and size of sub-critical cracks in pipelines in situ.

In 1981, atmospheric corrosion tests on plain carbon and low-alloy steels which have been exposed for seven to ten years at Otawa and Tuktoyaktuk, will be assessed.

Work will continue on aluminum bronze propeller alloys and on ship-plate steels for service in arctic waters.

Resource Management Branch

Responsibilities

The Resource Management Branch administers and manages mineral resources in Hudson Bay and Hudson Strait. The branch exercises comprehensive statutory authority and regulatory control over the exploration for and development of mineral resources of offshore regions under the jurisdiction of EMR.

The disposition of oil and gas rights on these Canadian lands is governed by the Canada Oil and Gas Regulations, promulgated under the Public Lands Grants Act and the Territorial Lands Act. The authority for supervision and control of oil and gas activities is provided by the Oil and Gas Production and Conservation Act.

The administration and disposition of minerals, other than oil and gas, is governed by the Canada Mining Regulations, also promulgated under the Public Lands Grants Act and the Territorial Lands Act.

Review 1979-80

As of March 1, 1980, the branch administered 94 Hudson Bay exploratory permits for oil and gas covering some 2.08 million h. Of these, 62 permits involving some 1.40 million h, are in northern Hudson Bay in the vicinity of Mansel and Southampton Islands, where exploration for oil and gas has been suspended since 1971 at the request of native inhabitants.

No offshore drilling operations have been undertaken in Hudson Bay or Hudson Strait since 1974.

No further oil and gas activities are anticipated for 1980. However, it is hoped that with increasing prices for hydrocarbons, industry will renew its interest in the relatively untested potential of Hudson Bay. Exploration for hard minerals on islands in Hudson Bay and Hudson Strait is presently at a low ebb with no programs taking place in 1979 and none anticipated for 1980.

Canada Centre for Remote Sensing (CCRS)

Responsibilities

The Canada Centre for Remote Sensing (CCRS) develops and coordinates a national program to produce remotely sensed data and derived information for the management of Canadian natural resources.

Review 1979-80

CCRS has been active in navigation in ice-covered waters, detection and tracking of oil spills, and monitoring of wildlife habitat.

The 1979 emphasis was on the investigation of radar and other microwave devices, space and airborne, for applications to all-weather sea-ice monitoring in the arctic as part of the Canadian Surveillance Satellite Program (SURSAT). Microwave data received in 1978 from the proof-of-concept NASA satellite, SEASAT-A, proved that satellites can provide frequent, accurate, timely data on the type and extent of ice coverage. SEASAT-A data was not sufficient for continuous tracking of ships and detection of small icebergs and "berg bits." All-weather monitoring would require the use of aircraft such as the CCRS long-range Convair 580, equipped with an advanced synthetic aperture radar, a scatterometer and a radiometer. Experiments in 1979 with the Convair 580 showed that sea ice can be classified successfully under winter and early spring ice conditions using active and passive microwave measurements from aircraft or satellites.

A practical demonstration of the use of visual and infrared satellite imagery for northern navigation was carried out in the summer of 1979. Imagery received at the Prince Albert Satellite Station was transmitted to Canadian Coast Guard (CSG) stations in Newfoundland by a facsimile system using land lines. Ice conditions were relayed to CGS icebreaker, Franklin, which was attempting to navigate the Northwest Passage. The Franklin's captain confirmed that the data gave an accurate picture of ice conditions and was useful in navigation.

Plans for 1980-81

In 1980 the SURSAT program office expects to recommend to Cabinet that Canada continue to move toward operational use of surveillance satellite data. Canada, by agreement with the European Space Agency, participates in a Remote Sensing Preparatory Program that will allow Canadian scientists and engineers to share valuable experience in developing a radar technology that will be of direct benefit to resource management in the arctic. Experiments will continue in 1980-81 to extend knowledge of the range of conditions under which sea ice can be classified with microwave measurements.

Mineral Policy Sector

Responsibilities

The Mineral Policy Sector assists in the development of federal policies on mineral resources. Its work deals mainly with non-energy mineral resources and the contribution which these make to the economy, both regional and national. Policy advice is based upon intelligence gathering and data analysis.

Review 1979-80

During the year, the Mineral Policy Sector northern activities involved special study groups comprising representatives of federal and territorial governments, industry, and interdepartmental committees. These included:

- the Northern Mineral Advisory Committee, which submitted its final report in September on mineral policy strategies for the North;
 - the Northeast Mackenzie District Transportation Study, which continued its examination of the transportation options in the region northeast of Great Slave Lake;
 - negotiations with Arvik Mines Ltd.;
 - a forecast of mineral development in the North.
- Special studies or projects initiated by the sector, or to which the sector contributed, included:
- investigation of the economics of different processing technologies applicable to Yukon lead-zinc ores;
 - preliminary economic analysis of ammonium paratungstate production in Canada;
 - a study, oriented to the western section of the District of Mackenzie, on the effect of smelting and refining on transport requirements of base metals;
 - the ongoing program for monitoring the reserves and production of Canada's non-ferrous metal mines;
 - studies of regional mining exploration trends;
 - a study on the development facing the most promising deposits.

The National Mineral Inventory card file on northern mineral occurrences and deposits increased slightly from its 1978-79 total of 2272 to 2300 at the end of March, 1980. A computer index file of the cards was largely completed by year end. This is expected to provide greater flexibility in the management of the file.

The compilation of Canada mining statistics, including northern mines, was continued by the Mineral Policy Sector. A statistical report entitled *Production of Canada's Leading Minerals* was published monthly.

An updated and expanded version of MR No. 181, *A Survey of Known Mineral Deposits in Canada That Are Not Being Mined* was prepared for publication and is expected to be brought out early in 1980-81. Of the 1350 deposits for all of Canada, 150, or 11 per cent, are from the Yukon and Northwest Territories. A second publication, *Canadian Reserves of Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold*, (MR No. 186) has 211 references including 35 in the two territories.

Plans for 1980-81

It is expected that advisory assistance to study groups on transportation, power supply, and northern mineral policies will be important elements in the sector's northern developments in 1980-81. The sector will continue to gather data bearing upon northern mineral development. Advice and other assistance will be provided as needed.

Surveys and Mapping Branch

Responsibilities

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian landmass through the production and distribution of maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteers of place names. The branch also ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained. Surveying Crown lands (national parks, Indian Reserves and territorial lands) is an added responsibility. Scientific and technical support is provided to other federal and provincial government departments and agencies.

The branch has seven units: Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and Geographical Services Directorate.

The branch director-general is chairman of the Interdepartmental Committee on Air Surveys. The branch also provides the secretariats for the Canadian Council on Surveying and Mapping and the Canadian Permanent Committee on Geographical Names.

Geodetic Survey Division

Responsibilities

The Geodetic Survey ensures the availability of geodetic information on the Canadian landmass. This is accomplished by creating and maintaining a national reference system of specially selected and marked ground points for which precise latitudes, longitudes and elevations are determined. The Canadian geodetic reference system forms an integral part of the larger North American system.

Review 1979-80

Satellite Doppler positioning was used to establish 27 primary horizontal control points in the Arctic Islands of Victoria, Prince of Wales, Devon, Bathurst, Amund Ringnes and Ellef Ringnes. A further six points to serve as mapping control were located on Coates, Mansel, Walrus and Bencas Islands in the northern portion of Hudson Bay. Nineteen hundred kilometres of second order traversing was completed in the arctic on Devon, Melville and Prince Patrick Islands where 86 new stations were established. Vertical control was established for 35 map sheets to support the 1:50 000 national mapping effort. This was centered on Prince Patrick, Borden, Brock and Mackenzie King Islands and covered some 12 000 km². In the Yukon Territory, nine astronomical observations were taken to strengthen and control horizontal survey orientation.

Plans for 1980-81

The primary vertical control net will be extended by adding a precise level line more or less following the Canol pipeline from the Yukon-Northwest Territories boundary to Norman Wells.

Supplementary control surveys, to aid mapping and other government programs, will continue in the Arctic Islands and the NWT and YT mainland. In the NWT these surveys will be mainly in the areas of Melville - Prince Patrick Islands, Victoria Island and the Coronation Gulf, Yellowknife and Fort Resolution and on the western coast of Hudson Bay near Eskimo Point. In the Yukon, such surveys will be carried out in the southeastern part of the territory and in the Mount St. Elias area. A feature of the work will be better determination of the height of Canada's highest mountain, Mount Logan.

Legal Surveys Division

Responsibilities

The division carries out surveys for land or resources transactions. It ensures the competence of the property surveys, land descriptions and plans made under the Canada Lands Surveys Act and other acts and regulations. The division fulfills the federal obligations regarding definition, survey and maintenance of provincial and territorial boundaries in Canada. Through its regional offices in Whitehorse and Yellowknife, the division provides survey-related advice and assistance to local government officials and the public.

Review 1979-80

Yukon Territory

Summer residential subdivisions were surveyed at Tagish (22 lots), Tagish Beach (95 lots) and Little Teslin Lake (17 lots).

Other legal surveys were executed at Mayo (two lots) and Judas Creek (one lot), as well as two Quad lots, a portion of the YT-NWT boundary where the Dempster Highway crosses, and the resurvey of parts of three baselines established under the Yukon Placer Mining Act. Three inspection surveys were carried out in the greater Whitehorse area and 17 Coordinate Control Monuments were established in the Whitehorse Coordinated Survey Area. The Whitehorse office examined 30 survey plans prepared by private surveyors and administered the resurvey of six Indian Reserves in northern British Columbia for the Department of Indian Affairs and Northern Development.

Northwest Territories

Forty summer residential lots were surveyed at six sites in the Yellowknife area and at Sandy Lake for DIAND. Inspection surveys were carried out at Prelude Lake and Sandy Lake subdivisions. The Yellowknife regional office examined 25 survey plans prepared by private practising surveyors. Assistance was provided to the territorial government community mapping program.

A computer terminal in Yellowknife is now being used to access the Geodetic Data Bank in Ottawa as a fast and reliable method for acquiring data on any of the control monuments in the Northwest Territories.

Plans for 1980-81

Yukon Territory

Approximately 125 summer residential lots will be surveyed in various areas of the Yukon as well as one parcel at each of Old Crow and Beaver Creek. There will be at least two resurveys of baselines established under the Yukon Placer Mining Act. This work will be done for DIAND.

The division will continue to inspect surveys and maintain existing Coordinated Survey Areas.



Satellite Doppler Site, Prince Patrick Island.

Northwest Territories

Approximately 50 summer residential lots will be surveyed in the District of Mackenzie for DIAND. Survey control will be established and targets placed in five communities in the eastern arctic for the territorial government's mapping program.

Divisional staff from the Yellowknife office will inspect some surveys in the eastern arctic and the Coordinate Control Monuments at the Frobisher Bay and Hay River Coordinated Survey Areas.

Topographical Survey Division

Responsibilities

The Topographical Survey produces and maintains topographic maps of Canada at scales of 1:250 000 and larger. It provides technical advice to CIDA and other government departments and agencies on mapping projects and technical and administrative support to the Interdepartmental Committee on Air Surveys.

Review 1979-80

In 1979, a total of 22 000 km of aerial photography was flown in the North for 1:50 000 new mapping. Indexes showing present status of aerial photography may be obtained from the National Air Photo Library, 615 Booth Street, Ottawa, Ontario, K1A 0E9. Topographic map indexes are available from the Canada Map Office, 130 Bentley Avenue, Nepean, Ontario, K2E 6T9.

In the North, 459 new 1:50 000 maps were completed and 12 maps at the 1:250 000 scale were overprinted with revisions. In northern Canada some maps were revised by the addition of data located on LANDSAT (land satellite) imagery.

In 1978, the Gestalt Photo Mapper GPM-II/3 system for the production of Digital Terrain Models (DTM's) went into production on 1:50 000 maps of the Arctic Islands. This machine automatically produces a dense array of elevation readings. Electronic data processing techniques turn these spot elevations into contours which are fitted to the remaining map detail drawn by other automatic devices. This system will produce 1:50 000 maps of Amund Ringnes Island during the current fiscal year as well as the eastern portion of Banks Island.

Plans for 1980-81

It is anticipated that 360 new 1:50 000 map sheets of areas in northern Canada will be produced. With the aid of the Department of National Defence, 54 1:250 000 scale map sheets will be revised in 1980-81 and 40 000 km of photography will be ordered for 1:50 000 mapping in the Northwest and Yukon Territories. Normally about 65 per cent of the photography ordered in the North is successfully completed.

Reproduction and Distribution Division

Responsibilities

The Reproduction and Distribution Division does photomechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products. It also provides reproduction support services to other federal and provincial government departments and agencies, municipal, and private sector users on a cost recoverable basis. Through the Canada Map Office, it is also responsible for the storage, retrieval, mail order sales and distribution of all topographical and thematic maps, aeronautical charts, publications and related air information produced by the Surveys and Mapping Branch.

A third responsibility is the National Air Photo Library (NAPL) which maintains and distributes products and information related to federally-owned or controlled aerial survey, airborne remote sensing and satellite imagery.

Review 1979-80

The Map Reproduction Centre printed 620 maps of the National Topographic Series of the North, and printing services were provided for all Canadian aeronautical charts.

There were six electoral maps of the North reprinted for the 32nd federal election. Printing services were also provided to Environment Canada for 26 Northern Land Use Information Maps and 32 for the Glacier Atlas of Canada. Services were also provided to the Canadian Hydrographic Service of Fisheries and Oceans for 23 charts of northern waters.

The Canada Map Office received approximately 600 orders, valued at close to \$58 000, for maps and charts of the Yukon and Northwest Territories.

Thirty-five requests for air photo products and services from the Yukon and Northwest Territories were processed.

Plans for 1980-81

The number of items printed by the Map Reproduction Centre will depend on the producing areas.

Complete microfilm images and coverage catalogues describing the aerial survey imagery available of the Yukon and Northwest Territories will be established and equipped.

International Boundary Commission

Responsibilities

The commission maintains boundaries and regulates work within three metres of the international boundary. The commission also determines the position of the boundary should questions arise between the governments of Canada and the United States.

Review 1979-80

There was no boundary maintenance required for that part of the boundary north of 60°.

Plans for 1980-81

There are no planned operations in the North for fiscal year 1980-81.

Geographical Services Directorate

Responsibilities

The directorate designs and produces small scale maps, the National Atlas of Canada, aeronautical charts and flight information publications, toponymic (geographic names) service, and provides cartographic support services to federal and provincial departments and private agencies.

Review 1979-80

Nine maps with eastern arctic coverage were produced for the International Map of the World Series at a scale of 1:1 000 000.

Work continued on the fifth edition of the National Atlas of Canada.

A map of the 31st Parliament of Canada and a map of Indian and Inuit Communities and Languages were produced, each with portions relevant to the North.

A total of 48 maps were produced for the Canada-Gazetteer Atlas, of which seven involved the North.

Aeronautical charting activity in the Canadian North during 1979-80 included the production of nine revised aeronautical chart base maps at 1:500 000, 30 air information overprints and aeronautical information overprints on 1:1 000 000 charts.

A Visual Flight Rule (VFR) Aeronautical Strip Chart, at a scale of 1:500 000 covering the Alaska Highway between Fort Nelson and Northway, Alaska, was produced.

The high and low altitude enroute chart series continued, as did the Instrument Flight Rule (IFR) Supplements, Northern Supplements and Water Aerodrome Supplement publication. The publications, Canada Air Pilot, Designated Air Space Handbook and Flight Planning and Procedures, all with portions relevant to the North, were produced.

Cartographic support services included a map of National Parks and Historic Sites of Canada, a Landsat Index map and a map of the Northwest Territories showing location of debris from Cosmos 954.

Plans for 1980-81

Directorate plans for mapping activities in the North include the production of a political map of the Northern Hemisphere as well as the cartographic completion of 44 maps for the fifth edition of the National Atlas.

Aeronautical charting products will include four revised aeronautical chart base maps and 40 air information overprints. There will also be continued production of Enroute Charts, Enroute Supplements, Canada Air Pilot, and Northern Supplements. The VFR Aeronautical Strip Chart, covering the Alaska Highway, will be revised.

Polar Continental Shelf Project (PCSP)

Responsibilities

The Polar Continental Shelf Project conducts scientific investigations in the arctic and maintains and improves logistic support systems requiring base camps, a radio network and aircraft. PCSP also supports research within the mandate of EMR and other government departments. Field resources of the branch are made available to approved university and non-government research projects.

Review 1979-80

Field work, carried out from mid-February to late September, was coordinated from Tuktoyaktuk in the Mackenzie Delta and Resolute on Cornwallis Island.

A total of 150 scientific field parties were supported in the arctic by PCSP in 1979. The largest and most significant effort in 1979 was the EMR project over the Lomonosov Ridge (LOREX) in the Arctic Ocean. This project was coordinated by the Earth Physics Branch with logistic support by PCSP. Environment Canada had significant participation along with Dalhousie and McGill Universities, the Lamont Doherty Geological Observatory and University of Washington. LOREX was a geological and geophysical investigation of the Lomonosov Ridge, a mountain range extending from Ellesmere Island through the North Pole to Siberia.

The major hydrographic program for 1979 was in Queens and Wellington Channels using through-the-ice sounding techniques with a new ram device. A total of 12 787 spot soundings were made. Many different wildlife studies were carried out to establish baseline information on various species. Several geological and archaeological parties were in the field, describing the resources of the arctic in both a natural science and a historical sense. Of particular note were two important discoveries. First, fossil pikas (a vertebrate) were observed and gathered for the first time in the Canadian arctic, revealing a totally new dimension in the study of ancient terrestrial life in the far north. The second breakthrough was the first photography of a correctly identified Novaya Zemlya effect, the distorted image of the sun propagated to the observer by atmospheric refraction while the sun is slightly below the horizon.

Agencies supported in their Arctic research in 1979 were: Arctic Institute of North America, British Museum (Natural History), Defence Research Establishment Pacific, Environment Canada, Fisheries and Oceans, Indian Affairs and Northern Development, Government of the Northwest Territories, Lamont Doherty Geological Observatory, Milwaukee Public Museum, National Museums of Canada, Royal Ontario Museum, Sir Sanford Fleming College, Swiss Federal Institute of Technology, Universities of Alberta, Bristol, British Columbia, Calgary, Concordia, Dalhousie, Guelph, Manitoba, McGill, McMaster, Montana, Ottawa, Saskatchewan, Toronto, Victoria, Washington, Waterloo, Western Ontario.

The following summarizes work which PCSP supported:

Archaeology: Stanwell-Fletcher Lake, Somerset Island
Investigators: E. Bielawski, University of Calgary and S. Cole, Memorial University of Newfoundland

This was the pilot season for the Northern Cultural Heritage Project. Eight students from six northern communities participated in the archaeological field school and three received high school course credits. Dorset and pre-Dorset culture materials indicating complex reuse of the one site were recovered. The investigators have preliminary hypotheses regarding hiring and training northerners but have as yet to develop a formal model.

Archaeology: Karluk Island, Crozier Strait
Investigator: J.W. Helmer, University of Calgary

Early and late Dorset sites have been investigated on Karluk Island. The presence of iron tools in late Dorset sites is particularly interesting. One antler artifact, a rarity, has 27 identifiable human faces incised on the various surfaces. Preliminary investigations were undertaken at nearby Markham Point on Bathurst Island.

Archaeology: Brooman Point, Bathurst Island
Investigator: Robert McGhee, National Museum of Man

Both Thule and Dorset sites have been identified at Brooman Point. A Thule knife handle was found on the floor of a Dorset house, a discovery that may eventually show contact between the two populations. This contact has yet to be demonstrated on any arctic site. Four Thule houses were excavated and the majority of the 1200 Dorset artifacts recovered were from the roof and wall fill of these houses. More extensive excavations may be required as a salvage measure at this site because of the impending development of the mine on Little Cornwallis Island, a few kilometres across Crozier Strait.

Archaeology: Fort Conger, Ellesmere Island
Investigator: C. Parmenter, Parks Canada

The program to investigate and record high arctic historical sites was continued with funding from the Government of the Northwest Territories and PCSP. Recording was continued at Fort Conger and extant recordings of the three Robert Peary huts and of the foundation of A. Greely's weather station were completed. Planned test excavations at the site were limited by adverse weather.

Two camps, believed to be associated with Robert Peary's attempts at the north pole, were mapped and recorded and some artifacts collected. The northernmost site is believed to be the 1908-09 Crane City camp. The other site, located on Porter Bay, appears to have been a temporary campsite used during caching.

Archeology: Nunguvik, Navy Board Inlet*Investigator: Guy Mary-Rousellière, Pond Inlet*

The Nunguvik site, where much work has been done since 1965, is characterized by many Thule and Dorset structures. Some of the Dorset structures appear to have been inhabited for long periods as revealed by an accumulation of one metre of debris. It is not always possible, because of permafrost, to complete the excavation of some areas during one season. To date, 77m² of house complex 73 has been excavated over several summers. In 1979, 8m² were excavated to a depth of 65 cm. The limits of this large house complex have not been reached. More than 800 artifacts of stone, wood and other organic material were collected at this site in 1979.

Archeology: Bache Peninsula, Ellesmere Island*Investigator: Peter Schledermann, Arctic Institute of North America*

Work continued on sites at Bache and Knud Peninsulas. A number of arctic small tool tradition sites were located, including two early Dorset sites. Work on the large late Dorset culture sites on Knud Peninsula revealed several finely-executed carvings. A large number of Dorset art pieces were located in many of the Thule ruins. Work on the Thule culture winter sites produced a wealth of material from 17th century occupations. A large piece of woven cloth of Norse origin was found in a "Ruin Island" phase dwelling.

Biology: Decay of mammalian bone, eastern arctic*Investigator: A.J. Sutcliffe, British Museum*

Bones of terrestrial herbivores should, whenever available, be chosen for dating in preference to marine mammals. The marine diet introduces a radio-carbon dating error of as much as 700 years. An archeological site may be a good place to obtain samples from a single stratum that will allow this difference to be determined. Processes of bone destruction are carried out by animals, consumption, plants, bacteria and physical methods. A preliminary chronology for skeleton remains on the surface has been established.

Biology: Insects, Mackenzie Delta*Investigator: R.A. Ring, University of Victoria*

Many species of insects, some observed for the first time, were collected to study physiological and biochemical adaptability to cold. The cold hardness of insects in the arctic may be due to protein matter in the system.

Biology: Isopods, western arctic*Investigator: R. Korczynski, McGill University*

A collection of freshwater and saltwater isopods has been made. The research is a comparative biology study of the isopod in these two distinct habitats. Data on distribution, population density and size structure will be analysed.

Biology: Ornithology, geese, Mackenzie Delta*Investigator: T.W. Barry, Environment Canada*

A fifth and final season of a cooperative project to band white-fronted geese in Alaska and western arctic Canada was completed. About 16 000 geese were banded at Anderson River and vicinity during the term of the project. Analysis of band recoveries will provide survival rates and geographical distribution for the management of populations of these geese. Another project included the monitoring of summer whistling swans from Franklin Bay to the Alaska border. The swans of the coastal Beaufort Sea region might serve as an indicator of the populations and environmental factors affecting other less conspicuous waterfowl species.

Biology: Ornithology, thick-billed murres, Bylot and Coburg Islands.*Investigator: D.N. Nettleship, Environment Canada.*

Observations on the reproductive biology of murres were made at Cape Hay, Bylot Island and Coburg Island. Productivity, survival rates, patterns of growth and food requirements were recorded. Survival rate at Cape Hay was 48 per cent while at Coburg Island it was 71 per cent. Eggs were laid at Coburg, the more northerly point, four days prior to Cape Hay. Small eggs laid early seem to have the best chance for survival.

Biology: Ornithology, Alexandra Fiord*Investigator: H. Ouellet, National Museum of Natural Sciences*

In the Alexandra Fiord area, 24 species of birds were recorded. A total of 170 specimens were collected for use in taxonomic and geographic variation studies in addition to providing zoogeographical data. Due to a late season, a number of species which would normally breed in the area did not nest in 1979. Nine species of mammals were found, including a sizeable herd of muskoxen in Sverdrup Pass.

Biology: Ornithology, marine ecology, eastern arctic*Investigator: R.W. Prach, Environment Canada.*

Aerial surveys to locate breeding, staging and molting areas for non-colonial marine birds, especially eider and old squaw, continued. Possible study sites for an annual survey to monitor natural fluctuations of breeding numbers and densities were evaluated. The five-year study seeks to investigate possible relationships between condition and breeding success and the availability and proximity of food and nesting sites in nearby marine waters. These data will be used to develop a simulation model to help predict the effect of offshore hydrocarbon exploration, development and marine transport on the arctic marine ecosystem.

Biology: Zoology, caribou, northern Yukon*Investigator: A.M. Martell, Environment Canada*

The study hopes to determine the physical and biological characteristics of areas used for calving and the daily activity pattern and habitat of caribou while on their summer range in northern Yukon. This was the first of a four-year study. Vegetation plots were established for future reference and more than 800 observations were made of caribou. There was a marked shift of habitat during the summer.

Biology: Zoology, caribou, Prince of Wales and Somerset Islands*Investigator: F.L. Miller, Environment Canada*

Locations, directions, origins and destinations of Peary caribou trails were obtained in May-June during snowmobile treks and helicopter flights. For the first time, west to east inter-island movements were detected. Several theories have been advanced to explain the spring migratory-like movements between Prince of Wales and Somerset Islands. Exposed ground in the spring may be the key to caribou survival. Studies made of this spring icing phenomenon attempt to relate icing to forage availability and survival of the caribou.

Biology: Zoology, caribou, Prince of Wales and Somerset Islands
Investigator: D.C. Thomas, Environment Canada

The apparent comparative digestibility of plants eaten by Peary caribou in summer and winter has been studied. Peary caribou select forage of high digestibility but they consume large quantities of plants of low digestibility when snow or ice restrict access.

Biology: Zoology, mammals, Lancaster Sound

Investigator: D.E. Sergeant, Fisheries and Oceans

In 1976 an assessment of migratory mammals was made from Cape Hay, Bylot Island, and an aerial survey of Lancaster Sound. From these data, estimates were made of the numbers of sea mammals migrating through the Sound. In 1979, observations were made again from Cape Hay and eastward and westward movements were recorded. A small number of narwhals summered in the area.

Biology: Zoology, polar bears, Radstock Bay

Investigator: J. Lee, Government of NWT

During 1978, radio transmitters were attached to seven polar bears in the Radstock Bay area. In 1979, 12 bears were captured. Nine of these were recaptured, including two with 1978 radio collars. Of these, only one animal had retained the transmitter. No bears were located by radio transmissions. Neither bear appeared to have suffered any injury due to having a collar.

Biology: Zoology, polar bears, eastern and western arctic

Investigator: I. Stirling, Environment Canada

In 1974 and 1975, polar bear numbers and productivity dropped by about 35 per cent and 50 per cent respectively. The 1979 census showed that reproductive rates are recovering. The population of ringed and bearded seals dropped more drastically but seems to be recovering also. Studies continue on the behaviour and ecology of free-ranging bears.

Biology: Zoology, ringed seals, Holman, Victoria Island

Investigator: T.G. Smith, Environment Canada

The monitoring program of the seal harvest from Holman, which has continued for 10 years, was again carried out.

Botany: Yukon Coast and Herschel Island

Investigator: P.F. Cooper, EMR

Eleven locations in Buckland Hills and British Mountains and two new locations on Herschel Island were visited. Over 1000 individual specimens were collected. The cloudberry, *Rubus chamaemorus*, not previously reported from Herschel Island, was collected. Some rare specimens were collected from the British Mountains. A few plants were collected that had not previously been recorded so far north.

Botany: Loughheed Island

Investigator: S.A. Edlund, EMR

The nature of the flora and the relationships between plant communities and surficial materials were studied. Thirty-three vascular plants were identified.

Botany: Effects of crude oil on soil fungi, Devon and Cameron Islands

Investigator: P. Widden, Concordia University

Alberta crude oil was spilled in 1978 over controlled plots at Truelove Lowland (Devon Island) and at Bent Horn (Cameron Island). Initial results indicate that crude oil penetrates dry tundra more readily than wet tundra. However, fungal populations on wet tundra are more adversely affected by the crude oil than those on dry or intermediate sites. A significant proportion of the fungi isolated from all sites grow actively with crude oil as their sole carbon source.

Climatology: Queen Elizabeth Islands

Investigator: B. Alt, EMR

Investigation continues of the synoptic meteorology of years with extreme conditions during the last 20 years. Analysis of the warm summers shows that contraction of the 500 mb polar vortex, or a shift of it towards the Soviet side of the Arctic Ocean, results in warm conditions in the Queen Elizabeth Islands. Differences within the region are caused by the position and shape of the vortex. The cold summers, now being studied, are more complex.

Climatology: Axel Heiberg Island

Investigator: A. Ohmura, Swiss Federal Institute of Technology

The climate of the tundra region of the arctic becomes distinctive during the melt period. The fundamental difference in the surface energy balance among the tundra, ocean and glaciers in summer is the magnitude of the latent heat of fusion. The energy consumption through this component on the ocean and glacier surface is four to six times larger than on tundra. This difference is the basis of the different regional climates in the summer arctic.

Geodesy: Eastern arctic

Investigator: S. Crossley, EMR

A total of 27 new Doppler stations and three base stations were occupied between June 7 and July 24, 1979, to strengthen and control existing and future traversing in the Arctic Islands.

Geodesy: Devon Island, Seymour Island, Steffansson Island.

Investigator: V.J. Doucette, EMR

The planned traverse of 250 km between the Doppler satellite stations on Devon Island were completed and all planned topographical survey points were established. One topographical survey point was established on Grinnell Peninsula. An additional survey point on Seymour Island was established and the 1979 Doppler station on Steffansson Island was tied to the existing traverse.

Geology: Mineralogy, phosphates, Rapid Creek, Yukon

Investigators: H.G. Ansell, EMR, R.I. Gait, Royal Ontario Museum

Suites of rare phosphates and associated minerals were collected. A good quantity of specimens were obtained, including several that are among the world's finest.



Users of aerial survey imagery can study microfilm, showing a complete coverage of Canada, and colour microfiche of flight-line index maps on viewers like these at the National Air Photo Library and at regional sales outlets across the nation.

Geology: Quaternary, Cape Herschel - Bache Peninsula, Ellesmere Island

Investigator: W. Blake, Jr. EMR

Eight cores of bottom sediments were recovered from ponds and lakes to be analysed for age (^{14}C), pollen stratigraphy and diatoms. The glacial features on Cape Herschel and Pim Island were examined for marine shell samples. Sufficient material is now in hand to allow construction of an emergence curve for Holocene time in the Cape Herschel area. In addition, water and snow samples for chemical analysis were collected at 20 sites. A detailed botanical survey of Cape Herschel Peninsula was carried out.

Geology: Phanerozoic sediments, various locations

Investigator: H.E. Dunsmore, EMR

Attempts have been made to locate significant occurrences of uranium within Arctic Island Phanerozoic sediments to obtain data for an uranium resource evaluation of the region. Based on known geology and an understanding of how natural processes may concentrate uranium, attempts were made to predict where uranium was most likely to be found. Field work was carried out on eastern Axel Heiberg, central Ellesmere, northern Prince of Wales and Somerset Islands by ground prospecting, helicopter-mounted gamma ray spectrometry, and stream water and sediment geochemistry methods. The 1979 results were not encouraging. The uranium resource potential of a large portion of the Arctic Islands appears to be very low.

Geology: Quaternary, Boothia Peninsula

Investigator: A.S. Dyke, EMR

Field work included collection of till samples for determination of physical and chemical properties, ice flow directions, the Holocene marine limit and examination of major stratigraphic sections. An unusual quaternary section was discovered in western Boothia Peninsula.

Geology: Stratigraphy, northern Ellesmere Island

Investigator: A. Embry, EMR

Mesozoic and Ordovician-Silurian strata were studied at several locations. Several observations and discoveries will be reported.

Geology: Quaternary, northern Ellesmere Island

Investigator: J. England, University of Alberta

Particular emphasis was on mapping surficial geology, surveying raised marine deposits and collecting dateable organic material suitable for establishing a late quaternary chronology on ice recession and postglacial emergence. At the head of Clements Markham Inlet there is a massive zone of glacio-marine sedimentation. Driftwood, extremely abundant in this inlet at three different elevations, can provide a postglacial emergence curve. Useful paleoclimatic information should also be revealed.

Geology: Geomorphology, pingos, Sachs Lowland, Banks Island

Investigator: H.M. French, University of Ottawa

The internal structure of a large collapsed pingo was examined and a detailed morphological map prepared. The ice core of this feature is composed of segregated and injection ice.

Geology: Slope processes and cryogenic movements, Parry Island

Investigator: J.A. Heginbottom, EMR

The five experimental sites established in 1977 were revisited and resurveys of monuments, lines of movement pegs and soil pillars were completed. Preliminary indications are that most slopes are fairly stable. However, significant differential movement was found from excavation of two soil pillars in a north-facing slope.

Geology: Diamictons, Somerset Island

Investigator: R.G. H  lie, McGill University

Several Precambrian gneissic tors were sampled to study the different genesis of diamictons on Somerset island.

Geology: Surficial geology, Loughheed Island

Investigator: D.A. Hodgson, EMR

Surface materials dominated by silts were derived from the underlying Mesozoic clastic sediments. A glaciation of unknown age left scattered thin to thick morainial deposits. The island appears to have been immersed during a marine episode, which appears to have peaked about 10 500 years B.P. The low precipitation, as on most northwest Arctic Islands, has led to minimal growth of ground ice.

Geology: Precambrian, Operation Borden, Bylot and Baffin Islands
Investigator: G.D. Jackson, EMR

Operation Borden studies several thousand metres of strata in the Eqlulik and Uluksan groups of Proterozoic strata. Rifting was probably related to a late Proterozoic ocean opening to the northwest, perhaps an early phase of the Franklinian Geosyncline.

Geology: Paleontology, southwestern Ellesmere Island

Investigator: B. Jones, University of Alberta

Approximately 10 000 brachiopods were collected from 10 measured sections. Forty-five genera of fauna are now known in the Eids Formation (Devonian). At least 10 genera of brachiopods have been recovered from the Bird Fiord Formation (Devonian).

Geology: Geomorphology, Mackenzie Delta

Investigator: J.R. Mackay, University of British Columbia

Long-term measurements show that active layer summer expansion helps form the ridges of low centered polygons and that a thick snow cover can prevent ice-wedge cracking. Work at Illisarvik shows that in nearshore areas, where permafrost plunges lakeward, there is both downward and upward freezing. Illisarvik, the drained lake, continues to be examined by several groups. A visit to the mouth of the Horton River gathered data to show rate of delta growth, river downcutting and permafrost aggradation. Pore water in the permafrost at a site near Inuvik can be related to frost heave.

Geology: Stratigraphy, Operation Porcupine, Yukon

Investigator: D.K. Norris, EMR

The study was to verify the 1:250 000 maps of the southwestern part of Operation Porcupine and resolve some structural and stratigraphic problems. The type Tindir Group section adjacent to the international boundary with Alaska was visited.

Geology: Phosphatic iron formation, Rapid Creek, Yukon

Investigator: B.T. Robertson, University of Saskatchewan

There is discussion as to the age of this deposit. There is evidence for Upper Cretaceous and Lower Cretaceous age. This deposit was formed at an unusually high paleolatitude (about 80°N) whereas most such deposits are closer than 40° to the equator. This deposit is in a tectonically active environment as opposed to a stable shelf.

Geology: Stratigraphy, Blue Fiord Formation, southwestern Ellesmere Island

Investigator: G. Smith, McGill University

The Blue Fiord Formation is the only unit in the Paleozoic succession to contain substantial oil accumulation (Bent Horn field). Therefore, emphasis will be placed on analysing the fossils and rocks collected to determine the environment in which they were laid down.

Geology: Bedrock weathering, east central Ellesmere Island

Investigator: S.H. Watts, Sir Sandford Fleming College

Unusual bedrock weathering features were examined at 17 outcrop sites near Alexandra Fiord and Cape Herschel. Detailed sampling was done to assess which factors have influenced the processes and intensity of rock weathering. It appears that outcrop weathering is largely determined by position with respect to sea level (topographic position) and by mineral composition. In general, relatively rapid weathering in post glacial time can account for these weathering features.

Geology: Paleontology, Eureka Sound Formation, Axel Heiberg and Ellesmere Islands

Investigator: R.M. West, Milwaukee Public Museum

Samples were collected from four localities in 1979. The Eureka Sound Formation can now be divided into four informal members based upon fossil leaves and molluscs collected. Fossil pikas and other remains were collected during a visit to Haughton Astrobleme on Devon Island. These fossils come from rocks considerably younger than the Eureka Sound Formation and reveal a totally new dimension in the study of ancient terrestrial life in the arctic.

Geophysics: Paleomagnetism, Prince of Wales Island

Investigator: P. Dankers, EMR

There were 248 samples of red sandstones and siltstones collected over an area of 10 km² at the Peel Sound Formation. The orientation of all cores was measured with a sun compass. The natural magnetization has been measured. Thermal and chemical demagnetization of samples is under way. The first impression from the results of the demagnetizations is that the ancient geomagnetic field is recorded and partly preserved.

Geophysics: Seismic, Illisarvik, Richards Island

Investigator: J.A. Hunter, EMR

P and S seismic energy was recorded in the surface frozen layer at Illisarvik. In general, P wave velocities increase towards shore.

Preliminary interpretation of the marine refraction survey in 1978 (before the lake was drained) suggests that the talik zone closely mirrors the lake bathymetry. The seismic velocities within the unfrozen material of the talik zone are abnormally low and further suggest the presence of gas.

Geophysics: Geothermal, Arctic Canada

Investigator: A. Judge, EMR

Deep permafrost temperature data for almost 100 boreholes have now been published. Analysis of the data is under way including published results.

Studies of the shallow thermal regime in the Mackenzie and Yukon continued. Additional drilling and thermal instrumentation was carried out at the Illisarvik drained lake site to study permafrost processes.

Geophysics: Polar Atmospheric Refraction, Tuktoyaktuk and Resolute

Investigator: W.H. Lehn, University of Manitoba

Theodolite and tele-photography were carried out over the Beaufort Sea during all meteorological conditions available. Similar observations were made at Resolute. A sequence of photographs obtained at Tuktoyaktuk, is probably the first recorded of a correctly identified Novaya Zemlya effect. During this effect, while the actual position of the sun is a degree or more below the horizon, a distorted image is propagated to the observer by atmospheric refraction. The necessary refraction is generated by a wide-spread temperature inversion. Other interesting photographs of refraction phenomena were obtained.

*Geophysics: Radio navigation signals, Beaufort Sea**Investigator: A. Mortimer, Fisheries and Oceans*

Measurements were made to establish the availability, stability and accuracy of low frequency radio navigation signals in the Beaufort Sea. Omega and Loran-C signals were monitored at Tuktoyaktuk and elsewhere. Loran-C skywave transmissions provide coverage as far east as Cape Perry in Amundsen Gulf.

*Geophysics: Radio-echo sounding, Mer de Glace Agassiz, Ellesmere Island**Investigator: M.E.R. Walford, Bristol University, UK*

The objective was to test a new technique in radio glaciology and to explore the reflecting surface beneath a glacier or ice cap. Simple phase-sensitive radio-echo sounding techniques can be used for recognizing and analysing some reflection phenomena and distinguishing between grossly different geomorphological regimes.

*Glacier Physics: Mer de Glace Agassiz, Ellesmere Island**Investigator: W.S.B. Paterson, EMR*

A 138 m borehole was drilled to bedrock at the crest of the Agassiz Icefield. Dirt layers, found in the lowest few metres of ice, suggest that the base ice was at the melting point at some stage in the past. The present base temperature is -22°C and no dirt layers were in the 1977 borehole. There are also major differences in oxygen isotope profiles in the two cores. Analysis of the 1977 core is continuing. Routine mass balance measurements were continued on the Agassiz Icefield, the Devon Island ice cap and the Meighen ice cap.

*Hydrography: Queens and Wellington Channels**Investigator: P.V. Davies, Fisheries and Oceans*

Three helicopters flown for a total of 1044 hours in association with a tracked vehicle enabled the acquisition of 12 787 spot hydrographic soundings. Two helicopters collected 50 per cent of the soundings. A total of 77 days were spent in the field. Four tide gauges were installed for the duration of the survey.

*Hydrography: Queens Channel**Investigator: G.R. Douglas, Fisheries and Oceans*

Data were gathered to supplement knowledge of through-ice sounding techniques. Various configurations of "spiked transducers" were investigated with respect to loading both physical and electrical, power, frequency and bonding conditions. Different tip configurations were evaluated. "Spiked transducers" are an acceptable method of sounding through ice.

*Hydrology: Mackenzie Delta**Investigator: J.C. Anderson, Environment Canada*

Hydrologic studies continued at several drainage basins in the taiga and tundra environments of the eastern Mackenzie Delta region. The major overflow icing recurred on Hans Creek, upstream of the proposed Inuvik-Tuk Highway crossing. Pre-melt snowpack water equivalent was below average. River runoff totals for the entire season were extremely low in 1979. Reconnaissance flights by helicopter of the Dempster Highway on May 7 and 10 revealed few hydrologic trouble spots.

*Hydrology: Aufeis, Hans Creek**Investigator: A. Gell, Environment Canada*

Growth and decay of icing on Hans Creek near Tuktoyaktuk was monitored and its geotechnical significance assessed with particular reference to the proposed Inuvik-Tuktoyaktuk Highway crossing.

*Hydrology: Inuvik and Melville Island**Investigator: A. Wankiewicz, Environment Canada*

The determination of heat and moisture flows within the bed and banks of an arctic stream and their effects on stream bed heaving and icing formation may help answer problems in engineering structure and water supply in the arctic. Temperature profiles have been measured to a depth of 13 m beneath the bed of streams near Inuvik and Rae Point on Melville Island. The observations are being analysed in terms of a hydrothermal simulation model and to develop a procedure for predicting the existence of unfrozen zones beneath arctic streams.

*Meteorology: Data collection, eastern arctic**Investigator: B. Alt, EMR*

The weather collecting program continued to provide valuable additions to the operational network. At the height of the season, twice daily observations from 25 stations were relayed via Resolute to Arctic Weather Central. The weather data and station information (1972-1979) are presently being transferred to archives at AES.

*Natural Resource Survey: Thomsen River, Banks Island**Investigator: G.W. Scotter, Environment Canada*

The Canadian Wildlife Service and the Canadian Forestry Service carried out a natural resource inventory in the Thomsen River region of north central Banks Island. The inventory considers climate, physiography, bedrock and quaternary geology, permafrost and periglacial phenomena, soils, hydrology, vegetation, ecological land classification, wildlife (mammals, birds, fishes) and human history.

*Oceanography: Chlorophyll, Lancaster Sound**Investigator: J.F.R. Gower, Fisheries and Oceans*

Reflectance spectra were computed as representative of different water conditions. Records indicate: medium chlorophyll levels in eastern Lancaster Sound and Pond Inlet, very low levels in Baffin Bay and western Lancaster Sound, higher levels near Grise Fiord and east and south of Bylot Island, very high concentrations north of Bylot Island in entrance to Lancaster Sound. The deduction of quantitative concentrations of chlorophyll requires a comparison with ship measurements that were taken within a short time period.

*Oceanography: various arctic locations**Investigator: E.L. Lewis, Fisheries and Oceans*

The study continued of physical oceanography in Bridport Inlet (Melville Island), the proposed terminal for the LNG tanker facility to move Sverdrup Basin gas to southern markets. The heat flow from the polynya near Dundas Island was studied by gathering temperature data over the open water. Field data were obtained in the Beaufort Sea dedicated toward development of a computer model for sea ice motion in the land-fast ice.

*Oceanography: Northwater, Baffin Bay**Investigator: F. Muller, Swiss Federal Institute of Technology*

Seven remote sensing flights were flown over the northwater during October to February. An energy exchange study was also conducted on the sea ice at Resolute. The monthly radiation budget and energy balance of the northwater was re-evaluated. The annual energy balance is characterized by two distinctly different regimes. The winter regime consists of the large supply of heat from the sub-surface sea water and by the loss through sensible heat flux and the radiative emission. The supply of heat from the subsurface water reaches a maximum in January and terminates in April.

*Oceanography: Sverdrup Basin**Investigator: S. Peck, Fisheries and Oceans*

Fourteen current meters were moored on transects from Ellef Ringnes Island to Sabine Peninsula and between Lougheed and Cameron Islands. The currents are tidal-dominated.

*Oceanography: Tidal measurements, southeastern arctic**Investigator: F.E. Stephenson, Fisheries and Oceans*

Historically, there has been a serious lack of tide data in the southern and eastern arctic waters. Gauges installed in Franklin Strait, Peel Sound and Prince Regent Inlet in April were recovered in June. The tide propagates northward through Peel Sound and Franklin Strait. Eight gauges were also installed on August 14 and 15 at Coppermine, Cambridge Bay, Coronation Gulf, Gjoa Haven, Spence Bay and Queen Maud Gulf. These instruments will sample once an hour for approximately 12 months.

*Oceanography: Tidal surveys, Sverdrup Basin, Queens and Wellington Channels**Investigator: B.J. Tait, Fisheries and Oceans*

A comprehensive tidal survey of the Arctic Islands is being conducted. Eleven gauges were deployed beneath the ice of various channels for about 33 days. Eight were recovered with useful records.

*Paleoclimatology: Inuvik area**Investigator: J.C. Ritchie, University of Toronto*

Five lake sites were successfully sampled using stationary piston coring equipment. Duplicate cores of unconsolidated sediment were recovered from all sites. Pollen analysis has proceeded and there are promising indications that a full record of Holocene and late-Pleistocene change will be available.

*Photography: Mackenzie River system**Investigator: D. Sherstone, Environment Canada*

Air photography was undertaken over selected areas of the Mackenzie River and some of its tributaries following the break-up of river ice from Fort Nelson to Tuktoyaktuk. Additional photography was done in the Coppermine and Dawson City areas.

*Photography: Artificial Islands, Beaufort Sea**Investigator: F.E. Stephenson, Fisheries and Oceans*

After four years of surveillance some general comments can be made regarding the erosion of artificial drilling islands: 1) islands in less than 3 m of water erode very slowly and often exist for a long time; 2) islands in 3 to 7 m usually erode to a level near chart datum in about 2 years, then the erosion rate slows dramatically and the island remains as a shoal awash; 3) islands in deeper water, once abandoned, disappear very quickly.

PCSP support was also provided for:

- a study of grasses on King Christian Island and their potential for revegetation programs;
- the collection of lichens and cushion plants to determine radioactive fallout burden in soils and vegetation;
- a study to determine the most appropriate areas for national parks in the Northern Baffin - Lancaster Sound area;
- a VLF mapping project at the Involute Hill near Tuktoyaktuk;
- a study of chemical carcinogens in shore sediments of widespread arctic waters;
- a survey of water runoff conditions near Resolute;
- a study of petrofabric characteristics of ice in permafrost;
- an investigation of land use and waste drilling fluid disposal;
- a collection of conodonts and graptolites near the Ordovician-Silurian boundary in northwestern Cornwallis Island;
- bedrock geology mapping in the Fury and Hecla Strait area of Baffin Island;
- research to document changes in natural vegetation coincident with disposal or spillage of drilling mud wastes in sumps;
- iceberg tracking in eastern Lancaster Sound;
- research on the hydrology of a nival-regime basin and the breakup processes of an arctic lake;
- a reconnaissance of several glacierized and non-glacierized basins on Devon Island;
- a study of the effects of artificial islands in the Beaufort Sea;
- a survey of background levels of heavy metals in arctic foodchains;
- a study of the environmental factors affecting the sea ice habitat of polar bears;
- a collection of vascular plants and Bryophytes in the Alexandra Fiord Lowlands;
- an investigation into the relationships between acoustic velocities and geotechnical behaviour in permafrost;
- separate winter and summer mass balance measurements on White and Baby Glaciers on Axel Heiberg Island;
- a study of the paleontology of the late Silurian strata of Cornwallis and Somerset Islands;
- a study of the Silurian Radiolarian fauna of the Cape Phillips Formation on Baillie Hamilton and Cornwallis Islands;
- a study of the evolution of thaw lake basins and their drainage.

Plans for 1980-81

The 1980 arctic field season will be at the same activity level as 140 scientific parties will be supported by PCSP. Once again, planned baseline studies will predominate as opposed to the brush-fire operations that prevailed three to five years ago. ■

Department of the Environment

DOE



AES ice reconnaissance aircraft equipped with SLAR (side-looking airborne radar) at Resolute Bay, NWT.

Environmental Protection Service

Responsibilities

EPS ensures that the federal government's regulations concerning environmental protection are enforced. It is concerned with air and water pollution control, solid waste management, environmental contaminants, environmental impact assessment and control and environmental emergencies. The service is the department's contact with industry and corresponding provincial agencies on environmental protection. In the North, the service operates through district offices in Whitehorse and Yellowknife.

Air Pollution Control

Responsibilities

This group, under the terms of the Clean Air Act, monitors and controls air pollution in the two territories.

Review 1979-80

The Arctic Mining and Asphalt Paving guidelines were incorporated into the Yukon Territorial Government's Public Health Ordinance in draft form and are now under review by the territory's Legislative Assembly.

Analysis for carbon monoxide and oxides of nitrogen continued on a seasonal basis. The levels of these two pollutants continue to exceed national acceptable limits during winter months. The National Air Pollution System (NAPS) station continued to operate in Whitehorse but sulfur dioxide is no longer measured as no detectable levels have been recorded for four years.

Problems were found with the delivery and storage systems for unleaded gas and monitoring continued for compliance with the Lead Free Gas Regulations.

The monitoring of carbon monoxide in the Yellowknife downtown core proceeded. Data collected indicate that the levels are within the acceptable range. One NAPS and two high volume stations are operating continuously. Thirteen dustfall sampling stations for arsenic operated as recommended by the Canadian Public Health Association Task Force. Compared to the 1975 data there has been a 30 per cent reduction in the quantity of arsenic emitted from mining operations in the Yellowknife area.

Discussions were held with Imperial Oil Limited on measures to reduce oil burning emissions. Air pollution control improvements at Norman Wells oil refinery were inspected.

A joint paper, Arsenic Concentrations in Suspended and Settleable Particulate Matter in Yellowknife, NWT was presented at the Pacific Northwest International Section - Air Pollution Control Association Conference in Edmonton.

Initial discussions were held with Cominco regarding air emission requirements for an acid plant. Discussions were held with Giant Mines to develop controls for a white arsenic AS²O₃ crystallization plant.

Plans for 1980-81

A vehicle emission testing program will be conducted in Whitehorse this summer to test a model developed by the Air Pollution Control Directorate relating engine tuning-performance to reductions of various pollutants in the air.

Should the Arctic Mining and Asphalt Paving Air Emission Guidelines be implemented as territorial regulations some compliance monitoring and enforcement activities will likely occur.

Sulfur dioxide emissions from the Giant Yellowknife Mines gold roasting operation will be monitored. The NAPS, high volume, carbon monoxide monitoring and data processing in the Yellowknife area will continue.

A fugitive emissions survey of the arsenic storage ponds at Cominco Con Mine in Yellowknife will be carried out in cooperation with the mine.

All Northern Canada Power Commission thermal electric power generating stations in the Northwest Territories will be studied to determine sulfur dioxide generation.

Site-specific sulfur dioxide emissions for a proposed acid plant at Cominco Mine in Pine Point will be developed and negotiated.

Collection of leaded and unleaded gasoline samples from one refinery, one terminal and various retail outlets will be carried out. The directorate will participate in the stack emission monitoring program at Giant Yellowknife Mines by providing an inspector under the Clean Air Act. The arsenic gold roasting regulations will be promulgated in July. Extensive work will be carried out in conjunction with the mine before promulgation of the arsenic gold roasting regulations.

Water Pollution Control

Responsibilities

With the Department of Indian Affairs and Northern Development and the two territorial water boards, Water Pollution Control ensures development and implementation of adequate water pollution control programs in the North. It implements national effluent regulations and other water pollution abatement programs and stimulates the development and application of water pollution control technologies as they relate to the special problems of the North.

Review 1979-80

Water chemistry and biological surveys were conducted at Cyprus Anvil and United Keno Hill, the abandoned Hudson-Yukon mine, and along the Yukon River from Whitehorse to Lake Laberge. EPS Yukon Branch monitored the performance of lagoons around the territory and assessed the initial performance characteristics of the new Whitehorse lagoon.

EPS conducted in situ bioassays in the Dawson area to document the effects of varying sediment loads, from placer mines, on arctic grayling.

EPS Yukon Branch presented briefs before the Yukon Territory Water Board on placer mining, the proposed Watson Lake sewage treatment system and on licence renewal applications of Cyprus Anvil and United Keno Hill.

During 1979-80 three publications were released. They were:

- A Survey of Environmental Mercury Concentrations in Yukon Territory, 1977. Regional Program Report: 79-21.
- Environmental Quality of Rose Creek as Affected by Cyprus Anvil Mining Corporation Ltd. (Survey data from 1974, 1975 and 1976). Regional Program Report: 79-25.
- An Environmental Survey of Selected Yukon River Headwater Lakes Impacted by Communities. Regional Program Report: 79-26.

Receiving waters were studied at the CanTung tungsten mine, the RayRock abandoned uranium mine and Pine Point lead-zinc mine. Marine organisms at two artificial islands were sampled to study impacts of drilling wastes. Norman Wells Refinery petroleum effluent was sampled to assess compliance with petroleum refinery effluent regulations and guidelines.

Two spills were investigated for compliance with Section 33(2) of the Fisheries Act and one successful prosecution carried out.

Seven technical reports were completed on 1978-79 field studies carried out in the Northwest Territories.

A working group committee was formed under the Water Board to develop guidelines for municipal use of water. Several technical committee meetings were attended to review industrial and municipal water licenses in the Northwest Territories and three departmental position papers were presented at Water Board public hearings.

Participation on the government-industry working group on offshore drilling wastes continued. A paper, A Comparison of Benthic Invertebrate Population Densities at two Artificial Islands in the Beaufort Sea, was presented at a symposium in Florida.

A chairman and secretariat were provided to the Regional Ocean Dumping Advisory Committee (RODAC) and inspectors to monitor ocean dumping. Six ocean dumping permits were issued. A contract study on cadmium in Churchill harbor was administered by RODAC.

Plans for 1980-81

Surveys will be conducted at United Keno Hill Mines and Cyprus Anvil to monitor compliance with the Metal Mining Liquid Effluent Regulations and Guidelines.

An under-ice study of winter dissolved oxygen levels will be conducted on streams of varying sizes and flows at several locations in Yukon.

EPS Yukon will provide one member to a multidisciplinary inter-departmental study team initiating several studies to assess the impact of the placer mining industry on the environment.

A study on toxic substances in the Yellowknife River watershed will be undertaken as a result of high levels of toxic substances being identified from preliminary 1979 sampling.

Participation will continue in the government-industry working group to develop guidelines on arctic offshore drilling wastes.

The effects will be assessed of drilling wastes on the marine environment at Netserk artificial islands.

Support will continue to the Northwest Territories Water Board by attending meetings of the board, technical committees and public hearings.

The directorate will continue to chair RODAC meetings and provide a secretariat, coordinate ocean dumping research, and inspect dump sites in arctic waters. The same level of ocean dumping permits is expected this year.

Technical support will be provided to the territorial government on the Slave and Mackenzie Rivers regarding municipal wastewater outfall design and river mixing studies. Two mines will be monitored to assess the effectiveness of regulatory controls.

Federal Activities

Responsibilities

The Environmental Protection Service is responsible for cleaning up sources of pollution at federal facilities and ensuring that new projects are environmentally acceptable. Pollution problems are identified and assessed and cleanups developed in consultation with other federal departments. An annual program is recommended to the Treasury Board for funding.

Environmental effects of new projects are assessed through a screening process. Assistance is provided to other departments through guidelines, codes of good practice and specific advice.

Review 1979-80

EPS Yukon was active in panel activities during 1979-80 with the Alaska Highway Gas Pipeline hearings in Whitehorse and other communities. Membership on Environment Canada's Alaska Highway Gas Pipeline Task Force involved a significant commitment of time and resources.

EPS participated in regional efforts to address environmental concerns over oil and gas exploration and production.

Several land use studies were undertaken, some in conjunction with other services of Environment Canada. Of particular interest were studies on the several diversions proposed by the Northern Canada Power Corporation.

The report Environmental Inspections of DEW Stations was completed and distributed to FELEC Services and the United States Air Force, which will be undertaking phase I of the cleanup. The rotating biological disc plant at Yellowknife Airport was refurbished, operated and monitored throughout the year.

The review and assessment of one environmental impact statement and several initial environmental evaluations of northern developments were undertaken in support of the Environmental Assessment and Review Process (EARP). The review of all land and water use in the Northwest Territories was coordinated and advice provided to the initiating federal agencies.

A study was reviewed on environmental concerns of offshore oil and gas production and Dome-CanMar regional plans for southern Beaufort Sea facilities.

A contract for a linear facilities assessment was administered. The report, Northern Linear Facilities in Canada, was completed and distributed.

Pollution prevention officers inspected ice islands, abandoned ice islands, and drilling rigs in the eastern arctic and Beaufort Sea. A joint year-end report was prepared with the Department of Indian Affairs and Northern Development and a three-year assessment report prepared for three previous years in the Beaufort Sea.

Liard Highway and several planned mine sites in the Northwest Territories were inspected.

Participation in the Arctic Waters Advisory Committee (AWAC) review of environmental operating conditions (EOCs) in Beaufort Sea and Davis Strait was continued. Also reviewed were ongoing drilling progress in the Beaufort Sea and eastern arctic and the capabilities of operators to extend drilling seasons. EOCs were developed for Beaufort Sea and Davis Strait.

A paper, Role of DOE in the North was prepared.

Development of drilling dump guidelines with Yukon district was begun.

Plans for 1980-81

EPS Yukon plans to inspect and review existing or proposed federal facilities. Land use inspections will again be carried out for those activities or programs that EPS does not believe have been addressed. The Yukon River Basin Planning Study will be supported.

Task Force and EARP panel activities will be dependent upon the timetables of the proponents and the Northern Pipeline Agency.

Inspections will be carried out at abandoned high arctic weather stations-DEWline sites. Inspections at federal facilities in the Northwest Territories will be carried out to evaluate pollution control facilities for wastewater and solid wastes.

Participation will continue on AWAC and DIAND land use-advisory committees and interdepartmental consultation on development of environmental controls. Because of the increase in mining development activity in the Northwest Territories it is expected that field inspections will be carried out on the currently highly-sensitive land and water use activities.

The directorate will continue to coordinate reviews of IEE and EIS when necessary and to participate in EARP panel hearings.

Routine inspections of Beaufort Sea drilling and artificial islands for compliance with site-specific requirements will be carried out on a monthly basis.

Waste Management

Responsibilities

EPS ensures that federal government activities provide for waste disposal and conservation. New procedures and techniques for solid waste management are developed and information distributed.

Review 1979-80

EPS Yukon represented the Yukon territorial government on the technical steering committee for the hazardous waste study undertaken in northern and western Canada. EPS managed the Whitehorse interim storage facility, although during this year the territorial government committed funds to improve the safety and security of the facility. EPS inspectors visited most of the more northerly communities to inspect solid waste management practices.

Initial discussions were held and plans made with federal offices in Yellowknife to begin a paper recycling project. A solid waste disposal training package was received from headquarters and presented to the Northwest Territories Department of Education.

Preliminary investigations were made into the establishment of a hazardous materials storage facility.

Information on solid waste exchange was distributed to the government and industries in the Northwest Territories.

Plans for 1980-81

EPS plans to continue to support the Yukon territorial government in hazardous waste management as long as the government is satisfied with the arrangements. Technical advice and management of the interim facility will continue to be provided. EPS will also continue to assist YTG with the design of solid waste facilities and review those operations where EPS has previously given advice.

Implementation of a paper recycling project will be undertaken in a government building. Public presentation will be made of a solid waste disposal training package to two communities in the Northwest Territories.

A leachate survey of the land disposal site in Yellowknife will be undertaken to determine its impact on the Yellowknife watershed.

Environmental Contaminants

Review 1979-80

EPS Yukon Branch worked with the territorial government to monitor the effectiveness of the pesticide spray program. The mode of application was changed from fixed wing to helicopter to give a higher degree of protection to the aquatic systems in the spray area.

Discussions were held with Alaskan counterparts concerning the transport of PCBs (polychlorinated biphenyls) overland through the Yukon for disposal. Follow-up inspections for PCB transformers and the surveillance of the shipping out of other PCB transformers were carried out.

The PCB inventory in the Northwest Territories and all PCB labelling have been completed.

The draft report for the residual herbicide contamination at navigational aids in the Mackenzie River was completed.

Plans for 1980-81

EPS, in conjunction with the Canadian Wildlife Service, will review and monitor the territorial government's pesticide program. EPS plans to undertake a survey to determine which, if any, pesticide fractions can be found in the more remote regions. Analysis for PCBs may be carried out at the same time.

The directorate will continue to keep the PCB inventory updated and continue the PCB labelling program as needed. An inspection of PCBs in the Northwest Territories will also be undertaken. Suspected contaminant sources and the affected environment will be sampled.

Environmental Emergencies

Responsibilities

EPS helps develop contingency plans for oil spills and other accidents involving hazardous materials. This involves coordination of technology and advice on spill prevention. EPS alerts appropriate agencies, reports on environmental emergencies, ensures adequate cleanup measures are taken, and, where necessary, initiates cleanup.

Review 1979-80

During 1979-80 EPS Yukon filed 23 significant event reports, 11 of which required initial on-site investigation and four required one or more follow-up inspections.

Steps were taken to update the contingency plan to deal with oil and hazardous chemical spills in Yukon.

EPS received and reviewed copies of contingency plans submitted by Yukon industry.

Seventy-two significant events were reported in the Northwest Territories and 12 of these were investigated on site to ensure that proper cleanup measures were undertaken.

Fuel Containment Guidelines are in final draft form and, when completed, will be implemented by the Northwest Territories government. A liaison program with DIAND and the territorial government on reporting and action on oil spills was completed. A talk was given to petroleum people on oil spill prevention and clean-up in the North. A meeting was held with the government on development of a contingency plan for hazardous material spills in the Inuvik region. Industrial contingency plans for CanMar, Esso Resources, Aquitaine, Panarctic and Giant Mines were reviewed.

The EPS-NWT contingency plan and work on the development of a contingency plan for the eastern arctic was begun.

The directorate coordinated community consultation on experimental oil spills in the Arctic Marine Oil Spill (AMOP) program to be held over the next five years. The directorate also participated in CanMar's experimental oil spill in McKinley Bay.

Plans for 1980-81

An inspection of the White Pass and Yukon Route multiproduct pipeline will be conducted immediately after the snow clears and before the company's 1980 maintenance and upgrading program begins. EPS Yukon Branch will continue its participation in AMOP. EPS intends to continue working with individual industry components to promote the development of site- and/or industry-specific contingency plans.

It is expected that the Northwest Territories Contingency Plan will be completed in cooperation with the territorial government. Initially the plan will be developed for the Inuvik region. The directorate will play a role in the technical and administrative components of the contingency plans for Esso Resources Ltd., Aquitaine Co. of Canada, CanMar and Panarctic.

The diking guidelines will be implemented, in cooperation with the territorial government, to ensure that facilities in the Northwest Territories conform to recommended design criteria.

The response network on oil spills will be continued with other government departments.

Regional and headquarters AMOP staff will work with communities, the territorial government and native groups on the experimental release of oil in nearshore and onshore sites.

Atmospheric Environment Service

Responsibilities

The Atmospheric Environment Service (AES) is the federal agency which provides information, consultation and advice on past, present and future atmospheric, ice and sea-state conditions. AES, through its observation and communication networks and arctic forecast systems, monitors air quality and conducts ice reconnaissance missions. It also participates in the federal Environmental Assessment and Review Process (EARP) pertaining to northern development and exploration and undertakes research projects to increase knowledge of atmospheric processes, weather dynamics, ice and wind-wave systems, and of the interaction of man's activities with the atmosphere.

Plans for 1980-81

As part of a major communications system study AES will investigate ways to alleviate problems of arctic communications data collection and dissemination. Implementation of recommendations will commence shortly after the study is completed in early 1981.

Planned data acquisition improvements include introduction of a cooperative Canadian-Danish satellite receiving station in visual and infra-red bands at Sondre Stromfjord, Greenland.

In the future AES will place increasing emphasis on activities such as general weather services for resource exploration and development, environmental baseline studies and investigation of the impact of ice on arctic operations.

AES will continue to provide information on past, present and future atmospheric, ice and sea-state conditions, conduct ice dynamics research, undertake climatological studies such as Climate of the Canadian Arctic Islands and Adjacent Waters, maintain air pollution monitoring networks and cooperate with development of guidelines for environmental emergencies.

Administration Branch

Review 1979-80

New design guidelines for hydrogen production-balloon inflation buildings at upper air stations were completed and will be incorporated in all new structures. Safety features include the use of non-combustible building materials, explosion venting and installation of automatic combustible gas detection and fire detection systems.

The site inspection program of upper air stations was curtailed during the past year in line with the financial restraint. The four high arctic weather stations were inspected on a visit with the Central Regions Planning Team.

Plans for 1980-81

It is anticipated that the site inspection program of upper air stations will concentrate in the western region.

Atmospheric Research Directorate

Responsibilities

The Atmospheric Research Directorate (ARD) advances knowledge and understanding of the atmosphere and the atmosphere-land, water, and biota interfaces. It seeks to increase the quality and quantity of environmental impact assessments and provides scientific information for the development of national ambient air quality objectives.

Review 1979-80

The third field phase of the combined AES - OAS (Ocean and Aquatic Sciences) arctic polynya (open water) study was conducted in March and April, 1979. In addition to the profile measurements of wind and temperature from a tower, a kytoon system was deployed to extend the measurements up to several hundred metres. The data obtained will be available to arctic transportation and resource exploitation.

Daily surface-based measurements of total atmospheric ozone continued at Resolute, NWT, using a Dobson ozone spectrophotometer. Once a week, a vertical zone profile from the earth's surface to approximately 30 km altitude was obtained by using a Brewer-Mast electrochemical balloon sonde.

The Canadian Arctic Air Pollution Program (CAAPP) of the Air Quality Research Branch investigated the influence of air pollution sources at mid-latitudes. Aerosol samples have been collected at Mould Bay on Prince Patrick Island in the western arctic since April, 1979, and at Igloolik in the eastern arctic since November, 1979. The samples were analysed for major ions such as sulfates and nitrates as well as for trace elements such as vanadium, manganese and aluminum. At the same time aerosol scattering of visible light was monitored continuously. The Canadian arctic aerosol sampling network is part of an international one involving sites operated by Norway, Denmark and the United States.

Scientists in the Meteorological Services Research Branch participate in the Beaufort Sea Winter Ice Experiment. This is a joint industry-federal government activity to develop site-specific and regional ice prediction models for supporting winter hydrocarbon production in the Beaufort Sea. The initial phase of the experiment was completed and involved the acquisition of meteorological, oceanographic and ice data. These data will be used in the development and testing of ice prediction models.

The Meteorological Services Research Branch continued to develop improved models to predict the movement and behavior of unconsolidated pack ice. Improved ice forecasting procedures were tested and tuned and the ice prediction model, operating at the Ice Forecast Central, was upgraded.

The Lancaster Sound area was selected for a study on an oil spill trajectory model in data-sparse northern areas. The available meteorological observations were supplemented with model-generated diagnoses of meteorological parameters required to drive the oil spill model. Preliminary indications are that the approach is feasible.

Another cooperative industry-federal government activity modified the AES oil spill trajectory model and test in the Beaufort Sea. Results of this study are not yet available.

An ice data system is being developed to identify and map sea ice information. Most of the software to produce the precision remapping of the satellite radiance data has been implemented. Development is continuing on the software to identify the ice in the satellite radiance data.

Plans for 1980-81

Air pollution monitoring (CAAPP) will continue at Mould Bay and Igloolik and begin at a third station at Alert.

The ozone program will continue at Resolute.

The development of site-specific and regional ice prediction models for application to winter pack ice in the Beaufort Sea will continue. A test will be made on the ability of these models to operate in unison, with the regional model providing information for driving the site-specific model. The site-specific modelling activity was contracted while the regional modelling activity will be conducted by the Meteorological Services Research Branch.

An improved ice prediction model for unconsolidated pack ice will be programmed for operation on the large computer of the AES and a simplified version will be programmed to operate on minicomputers.

Guidelines will be completed for a fast response capability on the movement of oil on water. The guidelines will form a manual adaptation of the AES oil spill trajectory model. Development and testing will continue on the ice data system.

Canadian Climate Centre

Responsibilities

The Canadian Climate Centre (CCC) undertakes climatological functions related to applications, impacts, information services, data management, monitoring, prediction and research. The CCC provides an effective climate service, developing the ability to forecast, understand and predict the effects of man on climate. In addition, the CCC is the lead agency for the Canadian Climate Program, a national development to coordinate climate-related activities in Canada.

Review 1979-80

Much attention was focussed on the Lancaster Sound - northwestern Baffin Bay area during the year. A review of known and estimated climatic conditions for Lancaster Sound was completed and work was begun on preparing more detailed offshore wind and wave climatologies. A detailed assessment of the climate of northwestern Baffin Bay was prepared for Petro-Canada.

Other activities included publication of the first volume of the *Climate of the Canadian Arctic Islands and Adjacent Waters*.

Activities under the Ice-Covered Waters Program included the development of a set of geostrophic wind statistics for arctic waters. Progress was made in the preparation of a climatology of high and low pressure centres over the Canadian arctic for January and July.

Plans for 1980-81

Further studies of geostrophic winds in offshore areas will be made using data employed in the Lancaster Sound study. The projects on ship-hull steel selection and snowfall measurement technique will be completed. The second volume of the *Climate of the Canadian Arctic Islands and Adjacent Waters* will be published. A study of sea-ice variations and how they may be related to climatic parameters will be undertaken.

Central Services Directorate

Responsibilities

The Central Services Directorate (CSD) provides ice information. CSD, through its Ice Branch, provides ice information to support transport and resource exploration needs in the arctic. It also provides climatological computing services, technical and professional training, language planning, maintenance for data acquisition networks and expertise for the development and implementation of atmospheric instruments and systems.

Review 1979-80

The Ice Branch program continued at levels similar to those of previous years. The level of baseline data gathering during the winter months improved slightly. The extended season in December occurred as the result of participation in a cooperative industry-government Winter Ice Experiment in the Beaufort Sea (WIEBS). Operational satellite coverage of arctic regions, however, decreased significantly as a result of lower satellite orbit paths. Coverage of the archipelago and northern Baffin Bay areas was particularly affected.

The ice forecasting program continued to provide current ice condition charts, short-range and 30-day forecasts, and seasonal outlooks. The near-real-time availability of ice information from the reconnaissance aircraft through a direct aircraft-to-Ice Forecasting Centre communication link has significantly improved. Items of special interest during the operational ice season included the extension of support to the Beaufort Sea offshore drilling operations, the extended navigation season into the Nanisivik Mines, and the severe ice conditions in the western Northwest Passage and associated difficulties with ship movements.

During the year, development of digital forecasting capability continued.

Provision of ice climatological support and advisory services continued. Development of archives and general data continued. As in past years, summer students were used to help reduce the backlog of unanalysed laser data.

A senior research scientist was added to the Ice Branch staff during 1979 to enhance the service's capability in ice research.

Training branch conducted formal weather observing courses at training centres in Colorado Springs and Cornwall, Ont., for staff assigned to DEW line and AES stations in the arctic. Training manuals and examinations used for training observer-communicators of the Arctic Community Airports program were reviewed and up-dated.

In 1979, Atmospheric Instruments Branch became a part of the directorate.

Plans for 1980-81

Planned data acquisition improvements include introduction of a cooperative Canadian-Danish satellite receiving station at Sondre Stromfjord, Greenland, for improved arctic coverage. An improved laser profiling system will be installed on one of the reconnaissance aircraft and an experimental passive microwave radiometer on the other aircraft.

Development of digital forecasting technology in the ice forecasting program should advance with the addition of a computer scientist in April. Ice climatological activities will also accelerate with the addition of one climatologist. Completion of ice atlases for the eastern seaboard and the arctic is expected and the annual Ice Summary and Analysis publication should be brought up to date.

Training support services for all weather observing programs in the arctic will be provided at approximately the same level as in 1979-80.

Field Services Directorate

Responsibilities

The Field Services Directorate (FSD) provides up-to-date information, forecasts and warnings to most of the larger northern communities. FSD also provides scientific consultation on the application of meteorological and climatological information to northern problems. The directorate operates five networks for data acquisition, a rapid communications system, an Arctic Weather Centre, Canadian Meteorological Centre, a satellite readout station, contract stations and scientific support offices.

Review 1979-80

Meteorological information, forecasts and consultation services were provided to a variety of programs and activities in the North.

Weather services for northern residents, aviation and other users continued to be provided from the Arctic Weather Centre in Edmonton, the Yukon Weather Centre in Whitehorse and the Weather Offices at Yellowknife, Inuvik, Resolute and Frobisher Bay. A presentation technician, assigned to the Fire Control Centre in Fort Smith, and a meteorologist in Whitehorse provided fire weather services. The Arctic Weather Centre again provided special weather, wave and ice forecast services to Canmar and Esso for operations related to hydro-carbon exploration in the Beaufort Sea. Special forecast support was provided to private meteorological companies which had contracts to provide site-specific weather, wave and ice forecasts to Esso and Aquitaine drilling operations in the Davis Strait. Plans call for a continuation of support programs for similar offshore activity.

Meteorological data are acquired from 49 synoptic stations which provide surface observations and 14 aerological stations which provide upper air wind, temperature and humidity measurements. An additional 93 climatological stations provide extreme daily temperatures, precipitation and other weather elements.

Discussions were held with DIAND regarding hydrometeorological data requirements in the North.

The meteorological inspection office in Whitehorse became fully operational. The office will be responsible for the installation and maintenance of meteorological and climatological stations in the Yukon.

Courses to train northerners as observer-communicators for AAWRS (Arctic Air Weather Reporting Stations) were held in Fort Smith in May and October, 1979, and in March, 1980. Another course is scheduled for the fall of 1980. The Northwest Territories government will assume responsibility for the formal training in weather observing after the fall course. A program of observer certification was undertaken to ensure the standards of observations at DEWline sites.

The synoptic station at Ennadai Lake was automated December 9, 1979. Measurements of temperature, humidity, pressure, precipitation and wind are now provided by an automatic observation station which relays the information via satellite. Similar automatic stations have been installed at Thelon River and Faro.

Teletype circuit 110 was extended from Hay River to Sachs Harbour using ANIK satellite facilities. This circuit allows direct transmission of weather data on a real time basis to and from Sachs Harbour. Circuit 110 is part of the AES National Weather Teletype Network used for the collection and distribution of weather data both domestically and internationally.

Prototype ADRES are still under test at Eureka and Norman Wells. The ADRES (Aerological Data Reduction System) is a computer-based system designed to simplify and reduce the work of an observer. The test results have been used to design the operational ADRES which will replace the prototype systems this summer. Implementation of ADRES in other sites will proceed in early winter, 1980. Eventually, all Canadian aerological stations will be equipped with ADRES.

Regional Scientific Services Division, staffed with meteorologists specialized in applied meteorology, contact arctic programs through assessment of environmental impact statements. All new development initiatives in the North are reviewed by the Regional Screening and Coordinating Committee. Examples of some northern projects considered are Beaufort Sea production, the Arctic Pilot Project, drilling in Hudson Bay, the Arvik mine development, the Dempster gas pipeline and hydro development on the Slave River.

Scientific Services has also been active in coordinating Environment Canada's contribution to the green paper on Lancaster Sound. The division is also represented on the Arctic Waters Advisory Committee of DIAND.

Climatological requirements for Yukon and the Northwest Territories are reviewed periodically by the division to anticipate areas of economic development and assure an adequate data base of climatology early in the process. Agreements for cooperative development of climatological networks are being discussed with both Yukon and the Northwest Territories and plans have been prepared for AES network requirements for Yukon. The Scientific Services Division participated in an EPS workshop to identify and establish priorities for departmental concerns in offshore oil and gas drilling.

Essential services in support of AES activities in the North were: Coordination of pool housing for approximately 70 employees; advice and guidance to employees relocating; procurement of goods for northern shipments; coordination with Transport Canada for the maintenance of major AES facilities; coordination of safety programs; establishment of financial systems for costing special services and collection of revenue; coordination with Transport Canada AES requirements for new buildings at Fort Smith, Baker Lake and Norman Wells.

Plans for 1980-81

In 1979-80, AES and Transport Canada, Western Region, cooperated in A Study to Assess Aviation Weather and Forecasting Requirements in the Yukon (1979). The recommendations of this study were accepted and the forecasting function, which was to be moved to the Alberta Weather Centre as a result of the budget cuts, will remain at the Yukon Weather Office in Whitehorse. Plans for 1980-81 call for updating forecasting support at the Yukon Weather Office by installing a Hewlett-Packard minicomputer system and a satellite imagery receiving station.

The AES has embarked on a major study of its communication system. This will be meshed with simultaneous studies in areas such as computer systems and data acquisition systems. The study will consider all communication systems and needs for communications services, both present and future, including ice and climatological data collection in the arctic. The study is expected to be completed by early 1981 and implementation of recommendations will commence shortly afterwards.

Meanwhile, AES and the Department of National Defence are discussing plans for satellite communications facilities in the high arctic for transmission of weather data from Mould Bay, Alert Bay and Eureka. The proposal would use the ANIK satellite system for the extension of the Weather Teletype Network.

Plans have been approved for reconstruction of the hydrogen generator building at Baker Lake. The building is to achieve a new standard which includes a number of safety features. Construction of a new building is also planned for Fort Smith. This building will be made for use with helium and will not use the same design criteria as employed at Baker Lake. The use of helium at Fort Smith is a test to assess feasibility, costs and operating procedures. Helium does not present the same problems in handling and storage as does hydrogen.

Science Adviser

Responsibilities

The science adviser provides advice on science-related policies and evaluates departmental scientific activities. The office studies scientific and technical information on the environment and the use of renewable resources. It develops techniques for obtaining scientific knowledge of the environment and indicates possible consequences of change. Where appropriate, the science adviser provides contact between scientific activities of the department and those of other agencies.

Review 1979-80

The office coordinated Canadian interests in multinational research programs in polar regions in marine-atmosphere heat exchange, ice dynamics, geophysics, arctic tectonics and environmental changes. It contributed to reviews of environmental information in the North and to information and appraisal of the effect on the environment of energy activities in northern Canada and Alaska.

Environmental Management Service

Canadian Wildlife Service

Responsibilities

The Canadian Wildlife Service (CWS) conducts research, manages and administers programs concerning migratory birds under the Migratory Birds Convention Act and the Canada Wildlife Act. The service coordinates federal, provincial and territorial action on common wildlife problems, conducts surveys and inventories of wildlife, undertakes research on wildlife species in relation to their habitat, collects and analyses animal population data, and studies wildlife diseases and the effects of toxic chemicals on wildlife.

Migratory Birds Projects

Review 1979-80

In 1979, CWS banded 1600 shite-fronted geese in the Anderson River Delta as part of a US-Canada cooperative migratory bird management program. This represents the final year of the five-year program.

The CWS continued its ongoing whooping crane program in Wood Buffalo National Park. This program involves research into the breeding biology and population ecology of the only wild flock of whooping cranes in the world. It also forms a program with the US Fish and Wildlife Service to transplant excess whooping crane eggs to Gray's Lake, Idaho. These eggs, placed in sandhill crane foster nests, are an attempt to create a second wild flock.

The status of migratory birds was studied and important migratory bird habitats in the Yukon Territory were mapped and evaluated.

Plans for 1980-81

Whooping crane investigations at Wood Buffalo National Park will continue as will the whooping crane egg transplant programs in Gray's Lake, Idaho.

CWS will participate in population studies of the lesser snow goose in the Hudson Bay region. Snow geese and brant will be banded on Southampton and Baffin islands and cooperative research into the population dynamics of lesser snow geese and Canada geese will be conducted near Churchill, Man.

Mapping and evaluating of important migratory bird habitats in the Yukon Territory will continue.

Mammalogy Studies

Review 1979-80

Major studies on the population, biology and behavior of polar bear continued in the western, central and eastern arctic.

The inter-island movement of Peary caribou was investigated. Work was continued on the population ecology of Peary caribou and on the digestibility of winter forage.

A cooperative research project was continued with the Government of the Yukon Territory on the Porcupine caribou herd.

A study on the feasibility of transplanting wood bison to their former range in the Nahanni Butte-Lower Liard River area was completed.

Plans for 1980-81

Continued work is planned on polar bears, including studies of their behavior and ecological relationship and the fidelity of female polar bears to maternity den sites.

Inter-island movements of Peary caribou will be monitored.

Studies of caribou will be expanded to include the Kaministiquia and Beverley Lake herds.

The research project on the Porcupine caribou herd will continue. Bison will be transplanted into the Nahanni Butte region.

Environmental Studies

Review 1979-80

Natural resource inventories were conducted for Parks Canada in potential National Parks sites, including the Thomsen River region of Banks Island and the Bathurst Inlet region.

Studies continued on the effect of the Dempster Highway and the proposed pipeline on the Porcupine caribou herd.

Eastern arctic polar bear population studies, started under auspices of the Eastern Arctic Marine Environmental Survey (EAMES), will continue into 1980-81.

Plans for 1980-81

A major new initiative will be research on the ecology of polynyas in the Northwest Territories.

The effect of the Dempster Highway on the Porcupine caribou herd will be monitored.

Assessment, Enforcement and Habitat Studies

Review 1979-80

CWS continued participation in the native land claim negotiations, such as the submission to the Committee for Original People's Entitlement (COPE) and the Council of Yukon Indians.

CWS completed its obligations in the Mackenzie River Basin study program. An assessment of the Slave River Delta revealed the area to be a major staging ground for migratory birds enroute to and from more northern breeding grounds.

CWS completed a major review of seabird studies in Lancaster Sound area. The study is the first phase of a major program to assess the seabird population of the northern transportation corridor.

CWS screened land use permits and issued appropriate permits on migratory bird sanctuaries as part of its ongoing management responsibilities. Special management-oriented biological investigations were conducted on Bylot and Queen Maud Gulf sanctuaries.

A listing was prepared of all key migratory bird habitat areas in the Northwest Territories and a position paper outlining a future protection strategy for Polar Bear Pass was produced.

Discussions on current and future CWS habitat protection and management activities were held with native groups in Pond Inlet, Coral Harbour and Cambridge Bay.

Plans for 1980-81

A public information document on Northwest Territories sanctuaries will be made available.

An inventory and census of snow goose colonies along west Hudson Bay will be conducted.

A major study will be initiated in Lancaster Sound to determine the biological value of polynyas.

CWS will assess the proposed Polar Gas Y line on migratory bird populations that inhabit Victoria Island.

Inland Waters Directorate

National Hydrology Research Institute

The National Hydrology Research Institute, established in Ottawa April 1, 1979, carries out scientific studies of surface water, ground water, and snow and ice. These studies include both process and applied research as well as modification and development of instrumentation and technology for laboratory and field analysis.

Ground Water Division

Responsibilities

The Ground Water Division research programs emphasize the development of hydrologic techniques, methodologies and instrumentation for ground water resource evaluation and ground water aspects of environmental impacts.

Review 1979-80

In the fall of 1979, 12 time-lapse cameras were installed at a number of stream crossings along the Alaska Highway, west of Whitehorse, to monitor icing development in small stream channels. Field studies were performed in the Pine Point area to examine the interaction between the ground water flow regime and open pit mining developments.

Plans for 1980-81

Starting in early April, ice cores will be collected from icings in the streams monitored by time-lapse cameras, between Snag Creek and the Mendenhall River along the Alaska Highway. The cameras will be reloaded in May and some moved to other sites. During the summer or early fall ground water flows in the dry streams west of Klwane Lake will be investigated.

The joint research project with Pine Point Mines Ltd. will continue.

Surface Water Research

A surface water studies group, still being formed, identifies research needs in operational hydrologic studies and implements research projects to meet these needs. It studies hydrologic phenomena, such as evaporation, and develops precipitation-runoff models. Snowmelt models are of particular interest to this group.

Review 1979-80

Hydrologic investigations continued during the 1979 open water season at watersheds in the taiga and tundra zones of the eastern Mackenzie Delta region to obtain information relevant to the design and construction of the proposed Inuvik-Tuktoyaktuk highway. Data were gathered on snowpack water equivalent, river channel and culvert icings, precipitation, air temperature, river discharge, suspended sediment and stream water temperature.

Thermal regime and hydrologic conditions are being investigated for rivers which freeze to their beds in areas of continuous permafrost. The ground temperature monitoring program, which measured thermal profiles to a depth of 13 m beneath river channels and floodplains, was completed in April, 1979, after two years of data had been collected. Related environmental data have been assembled into a data-base for modelling unfrozen zones beneath arctic rivers.

The program in the lower Liard and Mackenzie Rivers involved remote sensing of the breakup phenomena and ground study of pre-breakup ice conditions and ice jams. Ice jam prone sites were located in the spring and studies of channel geometry were completed in August. Thermal infra-red techniques were used to study thermal mixing at major tributary junctions along the Liard River. Both the river and its tributaries were examined for sediment production zones and suspended sediment generation.

A study was completed on the hydrologic aspects of culvert design for fish passage with particular reference to the Shakwak Highway project.

Plans for 1980-81

The highway-related hydrologic studies in the eastern Mackenzie Delta region will continue to acquire a data base for detailed analysis. In the summer, 1980, a study of lake regimes within the Mackenzie Delta will acquire baseline data to assess the potential impact of increased flow within the Mackenzie basin.

Modelling of ground temperatures beneath arctic streams is planned for 1980-81. The results will be compared to temperatures recorded at stream-crossings near Inuvik and Melville Island.

In April and May, ice jams and suspended sediment in the Fort Nelson and Liard rivers will be studied. In June attention will focus on the timing and pattern of breakup in the Mackenzie Delta; and in August, the spatial variability of suspended sediment concentrations in the Liard and Fort Nelson Rivers. In October and November, the pattern, characteristics and timing of freeze-up processes will be studied in the Mackenzie Delta and on the lower Mackenzie River. Reconnaissance aerial photography will be undertaken.

Snow and Ice Division

Responsibilities

The Snow and Ice Division studies hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology, and develops and maintains an inventory of perennial snow and ice in Canada.

Review 1979-80

A reconnaissance ice core site survey was carried out on the Penny Ice Cap, Baffin Island. A 20 m core was retrieved that covers the past 30 years. Ice depth at the site is 550-600 m. Reference poles, in a strain array, were inserted and a cache left for future medium-depth core drilling planned for 1981-82. An electro-mechanical drill, based on a Ruffli-Rand design, was constructed and tested in Ottawa.

An additional 24 basins with 1191 glaciers were added to the perennial snow and ice inventory of the Yukon Territory.

In the St. Elias region a reconstruction of the glacial lake chronology of the Donjek Glacier terminus area is well under way.

Field studies of permafrost continued near Tuktoyaktuk.

Plans for 1980-81

The division's electro-mechanical ice drill will be deployed on Mount Logan in the Icefield Ranges area and used to obtain cores for proxy climate data. Work will continue on establishment of the glacial lake chronology in the area of the Donjek Glacier terminus.

Water Quality Branch

Responsibilities

The Water Quality Branch collects, analyses, interprets and disseminates water quality data. These data are obtained from specific reference points across Canada and augmented by detailed information collected in comprehensive surveys.

Review 1979-80

The branch supports federal programs relating to national parks and data collection and surveys in the Yukon and Northwest Territories. The branch participates in the analysis of samples and storage and dissemination of data collected in the territories. The work for the Northwest Territories is administered by a group from the Inland Waters Directorate offices at Calgary and Winnipeg. Staff from Pacific and Yukon Region participated in joint studies with DIAND on Yukon waters and provided analytical support for DIAND water quality programs. Other activities included the preparation of reports and publications on the impact of the proposed pipeline in the Yukon and active participation in the development of a preliminary plan for the Yukon Basin Study.

Plans for 1980-81

The branch will take part in northern basin studies with DIAND and other water-oriented services in Environment Canada. Water quality trends in northern surface waters will be assessed.

Water quality objectives, proposed for the Northwest Territories and the Yukon by an interdepartmental working group, cover water quality management planning and preparation for effluent discharge permits. The objectives have been recommended to the territorial water boards.

Water Planning and Management Branch

Responsibilities

This branch develops water resource studies, programs to reduce flood damage and improve water management, and advises the Northwest Territories and Yukon on water planning and management matters. The branch participates in environmental assessments of development projects.

Review 1979-80

The branch participated in the review of water management aspects of projects under the Environmental Assessment and Review Process (EARP).

A hydrological study to evaluate design flows for hydraulic structures on the Shakwak project was completed and the last of three reports submitted to DPW. The Shakwak project is the upgrading and paving of the Canadian section of the Haines Road and portion of Alaska Highway from Haines Junction to the Alaska border.

Work continued on an intergovernmental study agreement, covering federal-provincial cooperation in the Mackenzie River basin, signed by the governments of Canada, Alberta, British Columbia and Saskatchewan in 1978.

Plans for 1980-81

Formal agreement is expected on a flood damage reduction program in the Yukon. Flood risk mapping will start in several centres in the Northwest Territories, under an agreement signed in 1979.

The Preplanning Task Force, Yukon River basin, with participation from DIAND, Environment Canada, B.C. Environment and Yukon Territory, completed its report in September, 1979, recommending a three-year, \$2.2 million framework planning agreement to evaluate resource development alternatives in the Yukon basin in Canada.

Studies by the Mackenzie River Basin Committee of water and related resources and of downstream effects of likely development projects will be concluded by a final report to the governments of Canada, Alberta, British Columbia and Saskatchewan.

Water Resources Branch

Responsibilities

The Water Resources Branch operates through two divisions, the Water Survey of Canada Division and the Hydrologic Applications Division. Across Canada there are seven Water Resources Branch regional establishments, six of which are headed by regional chiefs in Vancouver, Calgary, Regina, Winnipeg, Guelph and Halifax. The seventh office is headed by a regional engineer in Longueuil, P.Q.

The responsibilities of the Water Resources Branch include collecting, processing, analysing, storing, interpreting and providing water quantity and sediment data for water resources management.

The branch also provides advice and assistance in preparing briefing notes, background and position papers for developing policies and priorities on various aspects of national water programs.

Water Survey of Canada Division (Headquarters)

Responsibilities

The Water Survey of Canada Division (Headquarters) provides technical support of the survey's regional offices. It develops techniques, instrumentation and standards for collection of data.

It publishes the resultant records, and does network planning for sediment, non-routine field surveys, measures large river discharge, surveys sediment deposition in reservoirs, carries out photogrammetric surveys of glaciers, morphological surveys and studies of river channels, basins and estuaries.

Review 1979-80

Data collection platforms (DCPs), which have been operating since July, 1972, and May 1974, were converted to metric units on January 1, 1980. All future data will be stored and published in metric.

Plans for 1980-81

Under a contract for the development of Canadian-made DCPs, five units were delivered in January, 1980. These units will operate with GOES and TIROS-N, a polar orbiting satellite that will provide operational service similar to LANDSAT. The feasibility of receiving TIROS-N data at Prince Albert will be investigated. Improvements will be made to the Prince Albert satellite station receiving site.

Work will continue on a program to improve procedures for measuring the winter flow of arctic rivers. Work on developing procedures for measuring large rivers will continue.

Water Survey of Canada Division (Regional)

Responsibilities

Water Survey of Canada (WSC) collects, computes, and publishes surface water data for most of Canada. Besides operating a network of hydrometric gauging stations, WSC collects water samples for analysis. It also constructs, operates and maintains water-level recording stations to provide information on tides and water levels for the Hydrography Branch of Ocean and Aquatic Sciences, DFO. The division operates laboratories for the analysis of suspended sediment and bedload samples.

Review 1979-80

Under a hydrometric cost-sharing agreement with the Department of Indian Affairs and Northern Development, 127 gauging stations operated in the Northwest Territories and 57 in the Yukon. Sediment observations were made at one site in the Northwest Territories.

The tidal gauge network and Mackenzie River water-level forecasting programs were continued. Water supply work continued at Strathcona Sound, Baffin Island.

The Water Survey of Canada now operates 12 DCPs in the Northwest Territories (three of which were installed in 1979-80) and one in the Yukon Territory (installed in 1979-80).

Plans for 1980-81

Planning and operation of water quantity surveys in the Yukon and Northwest Territories will continue, guided by the coordinating committees established by Environment Canada and DIAND. The Calgary office of the Water Survey of Canada is designing an integrated hydrologic network incorporating requirements for surface water, groundwater, water quality and climatological data. The construction of six new stations is proposed for the Northwest Territories. An investigation will continue of the Slave River Delta, sponsored by the Mackenzie Basin Interdepartmental Liaison Committee.

Up to eight additional DCPs will be installed in the Northwest Territories in 1980.

WSC plans to continue operating the 12 tide and water level stations in these territories through 1980-81.

The Hydrologic Applications Division (Headquarters)

This completely new division meets the challenge of rationalizing data collection and analysis activities. The work represents a major shift into more analysis and interpretation of hydrologic data on a standardized national basis. This assists the Water Survey of Canada with identification of gaps and redundant stations and helps ensure that the data collection systems meet the needs.

The Corporate Planning Group (CPG) studies matters of department-wide importance.

The Policy Directorate provides departmental focus for policy-related activities concerning the North. It undertakes analysis of issues in the policy field and formulates the framework for discharging the responsibilities of the department.

The Intergovernmental Affairs Directorate provides strategic advice to senior management on major environmental and resource management issues and events involving federal-provincial, Canada-USA and international relations. There are northern aspects to a number of these issues. The directorate represents Environment Canada interests on the General Committee of the ACND and serves as the federal secretariat for the Canadian Council of Resource and Environment Ministers.

Lands Directorate

Responsibilities

The directorate researches and provides data on the ecological characteristics, potential land use, changes in land use, and land use issues. The directorate develops systems to collect, store, and present data on land. The directorate also provides policy advice on land matters, promotes environmentally sound land planning and management and undertakes cooperative land research and planning programs with other federal agencies and the provinces.

Land Data and Evaluation Branch

Review 1979-80

The Land Use Monitoring Division published 26 Land Use Information Series maps covering the southern Keewatin area, District of Keewatin.

These maps (scale 1:250 000) integrate a wide range of data on renewable resources and related human activities. The series, which covers most of the arctic mainland, includes information on wildlife and fish areas, native hunting and trapping, community information development areas and block land transfers, mineral resources, archeological and historical sites, recreation areas and conservation.

In conjunction with this program, the Ecological Land Classification and Evaluation Division provided a biophysical and ecological overview on climatic, physiography, vegetation, and surficial geology of the area.

Plans for 1980-81

Compilation and drafting of 31 Land Use Information Series maps are under way for the Back Lowland-Wager Bay area in northern Keewatin. Field research will be carried out in Lancaster Sound-Northern Baffin region during the summer of 1980. Publication of an additional 28 maps is expected in 1981.

The Ecological Land Classification and Evaluation Division will provide a generalized ecological overview for the Northern Land Use Information Series maps. In addition, two ecological land maps for the northern Yukon will be published. Research will be started on a new Northern Ecological Map Series (scale 1:1 000 000).

Policy Research and Coordination Branch

Review 1979-80

A report in the series Land Use Programs in Canada was published in August, 1979, outlining the roles of the federal and territorial agencies in land use planning and/or land management in the Northwest Territories.

This branch also participated in studies of the environmental aspects of native land claims in the Yukon and Northwest Territories.

Pacific and Yukon Region

Review 1979-80

The Lands Regional Office coordinated the environmental baseline studies program for the Yukon portion of the proposed Alaska Highway natural gas pipeline. This program identifies important areas of environmental concern. This office coordinated the joint review of both the Environmental Impact Statement (EIS) and the Environmental Terms and Conditions document for presentation to the EARP panel hearings.

The regional office was represented on the Alaska Highway natural gas pipeline EARP panel. The Alaska Highway gas pipeline Environmental Impact Statement was reviewed.

The office provided advice to DIAND and the Yukon Government on Biophysical Land Classification techniques.

Canadian Forestry Service

Responsibilities

The service advises and assists DIAND on forestry operations, practices and staff training. It participates in environmental impact assessments of industrial developments, conducts forest insect and disease surveys, prepares forest inventories and maps of forest and other vegetation and conducts ecological research in the North. The service compiles national statistics on forest stocking, growth, depletion and annual fire losses.

Pacific Forest Research Centre (PFRC)

Responsibilities

Research and advisory services are conducted under the auspices of the Yukon Forest Research Advisory Committee. This committee of senior federal and Yukon officials advises the PFRC on forestry research needs and priorities in the Yukon.

Review 1979-80

The third year assessment was completed into the regeneration seedling trials to evaluate natural and artificial regeneration options for white spruce on river floodplains at two test locations near Watson Lake. The fifth-year monitoring of a seed trap study investigating the dispersal of white spruce from a leave-strip in a logged area of the Liard River was completed in the autumn, 1979.

The Yukon is a highly-significant source of seed, such as lodgepole pine, for Scandinavian countries. Inspection of collection sites in the Yukon has become a major element in the seed certification service conducted by PFRC in accordance with Organization for Economic Cooperation and Development (OECD) rules. Total certified Canadian seed during 1979-80 was conservatively valued at \$1 million. A special study in support of seed certification was initiated to develop biochemical or physical methods for verification of seed source identity. Yukon sources were included in a pilot study and further work with Yukon material is planned.

As part of the PFRC's seed testing and certification program, under the auspices of the International Seed Testing Association (ISTA), certificates of quality were issued during 1979 for nine seed lots originating in the Yukon Territory.

During 1979 the analysis was completed of the Nisutlin test area, designed to assess different techniques in mapping the forest resource. Forest capability analysis of the southern portion of the Lake Laberge Ecoregion (ER-5), for which suitable aerial photographs were available, was completed.

Field examinations were conducted in the northern part of ER-5, coincident with ground checking of various renditions of digitized satellite data. Information on plant succession and vegetation dynamics was also obtained and further work was done on a vegetation map of the Yukon.

Three separate stratifications of a portion of ER-5, using digitized satellite imagery, were tried but abandoned as correlation between the imagery and field observations was generally unacceptable. However, the installation of the GEMS-300 system at PFRC provides for a closer contact between the system operator and the personnel conducting the field examinations. It was decided the strata should be aligned with the national requirements as set out by the Canadian Forest Inventory Committee and that emphasis should be placed on the forest environment. Consequently, the strata now being recognized include stocked softwood, stocked hardwood, non-stocked, non-forest and water.

Yukon renewable resource and management statistics (RRAMS) were updated to include burned areas up to 1978, preliminary growth and yield of white spruce and lodgepole pine. A separate storage and retrieval system for site-specific data was developed.

As part of a Canada-Yukon Territory Subsidiary Agreement on Renewable Resource Information and Tourist Industry Development, an ecological land resource inventory was conducted on the proposed Kusawa Lake Territorial Park area. This involved mapping the surface materials and vegetation and collecting other information for interpreting the suitability for settlement, recreation, and wildlife. A final report was expected by May 31, 1980.

A preliminary survey of vegetation and some environmental factors was completed along the proposed Alaska Highway gas pipeline route. The data are being processed. Twenty-nine 1:50 000 scale map sheets of the vegetation from the British Columbia border, near Watson Lake, to the Alaska border, west of Beaver Creek, are being completed. Pest populations were monitored at specified sample points along the Alaska Highway and a four-hour aerial survey was conducted. Populations were generally low except for large aspen torthix that defoliated aspen stands at Carmacks and near Dawson, McQuesten and Mayo.

Plans for 1980-81

The PFRC plans to continue the diversified approach to forestry-related data gathering.

Fifth-year assessments of the seeding and planting trials will be conducted. Monitoring of seed traps will continue. Efforts will continue to find a suitable location for a demonstration forest. A study will be initiated to assess softwood regeneration and competing revegetation of cutover lands to determine the effects of cut-and-leave management techniques on river floodplains. Burned areas will also be examined.

The certification of lodgepole pine seed will be continued and an expansion is anticipated. Consideration may be given to including other species, if demands arise. A meeting with the Swedish National Board of Forestry is anticipated in early 1980 to discuss future demands for lodgepole pine seed from British Columbia and the Yukon. Seed testing for purity and germination and the issuing of certificates will continue with an anticipated expansion to include many more seedlots.

An attempt will be made to assign forest capability ratings to the forest strata devised through digital analysis of satellite images in ER-5. Surficial materials, an integral part of forest capability rating according to Canada Land Inventory (CLI) techniques, cannot be mapped from satellite images. Therefore, only generalizations can be made on the expected or most likely forest capability.

An assessment will be conducted in Ecoregions 1, 2 and 3 in relation to satellite images at a scale of 1:250 000. Forest capability will be estimated for each unit.

Forest stratification, partitioning the forest environment into stocked softwood and hardwood stands and non-stocked land, will be completed for ER-5 using digital analysis of satellite tapes. If time permits, a similar stratification of the forest environment in Ecoregions 1, 2 and 3 will be initiated.

Yukon Renewable Resource and Management Statistics (RRAMS) will be updated to include areas burned in 1979. The feasibility of developing and testing a sub system to incorporate the Nisutlin data will be examined. The main system will be converted to make it compatible with the national forestry statistics data base.

The ecological land resource inventory of the proposed Kusawa Lake Territorial Park will be completed. A workshop will be held to explain the inventory procedure and results to Yukon territorial government.

It is hoped some time will be given to investigating the fuel mapping requirements of YLFS. A fire history study of Kluane National Park is also anticipated. This study, based on a request from Parks Canada to assist with a fire management plan, is to include data on frequency and fires locations, fuel, fire behavior, effects on vegetation and wildlife.

Northern Forest Research Centre (NFRC)

Review 1979-80

Northern Forest Research Centre completed digitizing and interpretation of satellite imagery to develop a data base for fire and timber management in the Northwest Territories. Fire management guidelines were prepared for Nahanni National Park. Liaison and advisory services were provided to the Mackenzie Forest Service and National Parks.

Plans for 1980-81

Preliminary surveys will be carried out to determine incidence and distribution of forest insects and diseases. A demonstration will be conducted to transfer vegetation inventory and fuels data bases to the Mackenzie Forest Service. New work will probably be initiated to develop a fire spread model using fuel descriptions from satellite imagery.

Petawawa National Forestry Institute (PNFI)

Review 1979-80

A method was devised to utilize Landsat satellite data to quickly map and tally the areas burned by forest fires.

The method was used on the largest of the 1979 fires to establish the perimeter location and location of unburned areas within the perimeter. In addition to this work, 18 experimental forest fire fuel maps were produced for an area near Whitehorse at various scales using Landsat data.

Plans for 1980-81

PNFI will continue to respond to needs in forest research north of 60°.

Parks Canada

National Parks Activity

Responsibilities

National Parks evaluates areas and sites to determine their potential as national parks and landmarks, and plans and manages the existing national parks.

Review 1979-80

The public consultation program, which began in 1978, to help assess the feasibility of setting aside five areas north of 60° as national parks and one area as a national landmark continued in 1979-80. The proposed sites being assessed are located in the northern Yukon, Banks Island, Bathurst Inlet, Wager Bay, Ellesmere and Axel Heiberg Islands, and the proposed national landmark site near Tuktoyaktuk. A report on this program will be presented to the Minister of the Environment in October, 1980.

The consultations have lead to a move to have the federal and NWT governments begin planning complementary national and territorial park systems. As a start, a Parks Canada planning officer was seconded to the Government of the Northwest Territories early in the year to provide technical assistance.

The views of native people are being obtained through meetings and discussions in the communities within and near the proposed park areas and through regional and national native organizations. The native people are chiefly concerned with protection of hunting, fishing and trapping and the settlement of land claims prior to park establishment.

Final designations and management of the 38 700 km² lands withdrawn for national park and other conservation purposes in northern Yukon in 1978 were studied in 1979-80. An interim report by the Northern Yukon Wilderness Park Steering Committee was received and reviewed by the Ministers of the Environment and Indian Affairs and Northern Development. The final report of this committee is expected in May, 1980.

Northern Research Studies

Research activities in the North pertaining to the areas of public interest included natural resource inventories at Banks Island and Bathurst Inlet.

Upcoming study of the natural resources of the Ellesmere and Axel Heiberg Island areas will be undertaken in the summer of 1980.

Other research in the North included regional analyses of terrestrial natural regions 15 (Tundra hills), 16 (central Tundra region), 36 (western arctic lowlands) and 37 (eastern arctic lowlands), as well as marine natural regions 5 (east arctic) and 6 (Hudson Bay inland sea). Future national parks and Canadian Landmark proposals will be selected from among the areas and sites identified by this research. Further such studies will be undertaken in 1980-81 of regions 7 (northern interior plateaux and mountains), 17 (northwestern Boreal Uplands) and 38 (western high arctic region) along with a study of marine natural region 4 (western arctic).



Kluane National Park

A potential National Park area of interest will be selected in the vicinity of Lancaster Sound and a boundary review of the East Arm of Great Slave Lake National Park Reserve will be undertaken in 1980-81.

Kluane National Park

Review 1979-80

Kluane National Park and the United States of America's adjacent Wrangell-St. Elias National Monument were jointly nominated to the UNESCO World Heritage List in 1979.

The new Administration-Visitor Information Building was completed during the year. Other projects included completion of the self-guiding rock glacier trail and the icefield ranges highway viewpoint. Planning of the displays for the new building was completed and construction is currently under way.

The Kluane Park Management Plan was completed and recommendations presented to the Minister.

There were 6 882 visits recorded in 1979-80, an increase from 6 056 in 1978-79.

Plans for 1980-81

Approval of the Kluane Park Management Plan is expected during the year.

The National Film Board, in cooperation with Parks Canada, will produce a feature film of Kluane National Park.

A session of the Duke of Edinburgh's Fifth Commonwealth Study Conference will be held in the new Administration Building.

Interpretive displays and panels should be completed and installed for the official opening of the new building in August, 1980. A special ceremony unveiling a World Heritage Plaque is also anticipated.

Nahanni National Park

Review 1979-80

Nahanni National Park was the first natural site in Canada chosen for the UNESCO World Heritage List. A commemorative plaque was unveiled in a ceremony at Virginia Falls on September 4, 1979.

A volunteer program was initiated at Nahanni last summer involving 10 local area native students and their teachers. The students provided the park with valuable interpretive material, including information on traditional activities and local folklore. They also produced a group of paintings for display in the park offices.

National Geographic magazine visited Nahanni to prepare a feature article about the park.

A Spanish television film crew visited Nahanni on two occasions last summer to shoot footage for two films that will be given world wide distribution.

Interim Management Guidelines for the park were completed.

There were 346 visits recorded in 1979-80, an increase from 297 in 1978-79.

Plans for 1980-81

National Geographic will return for one month this summer to complete the field work required for the Nahanni article.

The U.S. Public Information Service television network will film a one-hour program about Nahanni.

The park expects to complete a plan for forest fire management.

The possibility of providing new access routes to Rabbit Kettle Hotspots in the northwest portion of the park will be examined.

Auyuittuq National Park

Review 1979-80

In addition to seven permanent employees and four seasonal positions, Auyuittuq National Park provides either indirect or direct employment for up to 35 people in Pangnirtung and Broughton Island. Work totalling over \$50 000 was contracted out. It included construction of two warehouses, general clean-up, dismantling and cleaning up an old DEW line site at Kivitoo, trail maintenance and construction.

Late break-up and an abnormal abundance of snow last year delayed many projects. These projects will be completed in the coming summer.

One Auyuittuq warden has completed a year's training in resource monitoring, mountain rescue and enforcement. The park will receive further funding through the Northern Affairs on-the-job training program to continue training of a locally-hired warden replacement.

Initial discussions took place with a group called Sipalisnekut, or the Museum Association in Pangnirtung, concerning joint use of a new visitor reception centre.

Last year 312 visitors registered for overnight stays in the park, up from 219 a year earlier. The average stay per individual was 13 nights. While the majority of the visitors were Canadian some came from the United States, Switzerland, Japan, Belgium and France.

One rescue was performed on an individual who contracted food poisoning while on a skiing expedition. A fatality occurred in the park when a member of a Japanese climbing party fell.

Plans for 1980-81

The construction of three washroom facilities will be undertaken.

All wardens will be attending an Emergency Medical Technician training course in Kluane to provide them with knowledge of first aid.

Two houses will be constructed in the Village of Pangnirtung to help alleviate the housing shortage.

Wood Buffalo National Park

Review 1979-80

Wood Buffalo National Park experienced one of the most severe fire seasons on record. Park towers actioned 105 fires, 97 of which were within the park. Total cost for presuppression and fire suppression was \$1 484 419.

A large Mammal Management Study was conducted in the park. Productivity of the bison herd declined since the late 1960s and early 1970s. The total count showed a drop in numbers from 5 539 in 1979 to 4 627 in 1980. Further research will be required to assess the significance of this decline.

New game regulations were passed and additional amendments were approved following meetings with the hunting and trapping associations in the area. These changes relate to open seasons for moose in the Garden Creek area and an increase in the total number of general hunting permits. Continuing contact was maintained with the hunters and trappers to discuss the administration of the regulations.



Nahanni National Park



Crow River, northern Yukon



Ellesmere Island

A 36-site campground at Pine Lake was completed, increasing the total number of campsites by eight. A removable floating dock was installed on the beach at the group camp and signage was completed by mid-summer. There were 421 groups registered in the Pine Lake campground in 1979-80.

The Cree Band continued development of the land set aside at Peace Point. In 1979-80 construction started on six log homes and a school. The Peace Point Liaison Committee, with representation from Indian and Inuit Affairs, Parks Canada, and the Band, administered the terms and conditions of occupation, guide development and use of the area.

The Government of Alberta's proposal for hydro-electric development on the Slave River was referred to the Federal Environmental Assessment and Review Office by Parks Canada. Permits have been issued to Alberta Government consultants who will study the engineering, environmental and socio-economic aspects of the proposal.

Plans for 1980-81

The day-use area at Pine Lake will be redeveloped and an orientation display erected at the 60th parallel on the Mackenzie Highway.

A Management Planning Program for Wood Buffalo National Park is under way. Public participation in the development of the Management Plan will begin in November, 1980. Major issues are likely to be park boundaries, road access, native land claims, resource use and development.

Klondike National Historic Sites

Review 1979-80

Dawson City was flooded on May 3, 1979, causing substantial damage to historic structures and artifacts. A major part of the funds was spent on repairing this flood damage.

The exterior of Madame Tremblay's store was restored and the second floor staff housing completed. A start was made toward construction of a woodworking shop.

Approximately 28 300 visits were recorded.

Plans for 1980-81

The stabilization program for the Klondike National Historic sites, and repairs caused by the 1979-80 flood, will continue. A cooperative program has been developed to assist the Yukon Territorial Government with implementation of the Dawson City part of the Tourism Subsidiary Agreement, in particular, the Old Territorial Administrative Building, Carnegie Library and the reconstructed A.C. Warehouse.

S.S. Klondike: National Historic Site

Review 1979-80

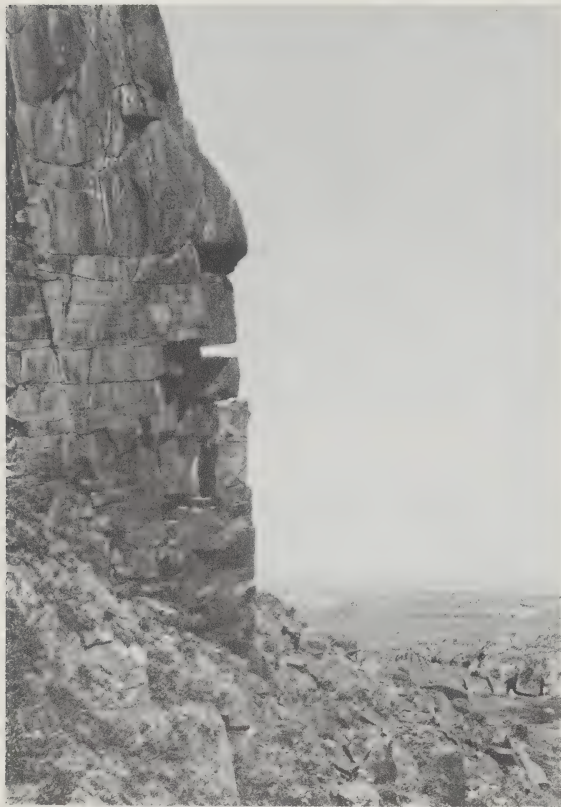
A restoration design concept for the S.S. Klondike was approved last year and an interpretive exhibit installed on the site.

Interpretive tours of the vessel were conducted during the summer months. A total of 32 762 visits were recorded in 1979-80, an increase from 29 055 in 1978-79.

Plans for 1980-81

Construction of a small visitor service centre, parking lot and pedestrian walkways will be undertaken in 1980-81.

The restoration of the S.S. Klondike will be completed and an official opening ceremony is planned.



Buchan Hills, Bathurst Inlet

Parks Canada and the Yukon Department of Renewable Resources and Northern Lands have completed a concept for development of the Yukon River as a recreational and historic waterway. Work began to protect heritage resources threatened by decay, vandalism or visitor overuse along the river. Initial clearing of brush and stabilization of some structures was carried out to help ensure that these remnants of the Klondike Gold Rush remain.

Plans for 1980-81

Parks Canada will participate with the Yukon Department of Renewable Resources and Northern Lands in a round of public consultation on the plan for development of the Yukon River as a recreational and historic waterway.

Negotiations of an ARC agreement are expected to follow this round of consultation.

Parks Canada (ARC Branch) will continue to discuss the proposed Canada Heritage Rivers System and Yukon Territory's representation in such a system with the Yukon Department of Renewable Resources and Northern Lands and the Department of Indian Affairs and Northern Development. ■

Agreements for Recreation and Conservation

Responsibilities

ARC seeks to preserve significant national natural and human heritage resources. This is accomplished through cooperation with federal and provincial bodies and other agencies. It involves identification of heritage areas and agreements for planning, development, preservation and operation. Emphasis is placed on developing facilities of historical, scenic and cultural significance.

An ARC agreement defines the required developments, assigns responsibility and allocates costs among the participating agencies.

The Department of External Affairs' activities in the North involve the operations of foreign governments and their agencies. The department is a member of the Advisory Committee on Northern Development (ACND) and of several sub-committees. It advises on matters having foreign policy implications, maintains a coordination and operational role in matters of international law and policy relating to the arctic and negotiates agreements with other countries proposing activities in the North.

Within the Department of External Affairs a number of divisions handle different aspects of arctic matters.

Science, Environment and Transportation Policy Division (EBS) coordinates Canadian policy on scientific activities of foreign governments or their agencies in the Canadian arctic. It also provides advice to the ACND on international policy aspects of scientific conferences, exchanges and agreements. The division is a focal point for interdepartmental consideration of requests by foreign interests to conduct scientific activities in the Canadian North. This division also coordinates departmental responsibilities in transportation matters, including international policy aspects of arctic civil aviation and arctic shipping. EBS coordinates information gathering on external developments pertaining to arctic transportation technology and plays an active role in discussions on environmental issues in the OECD and UNEP.

Industry, Investment and Competition Policy Division (EBI) monitors foreign economic interests in the North. Of particular interest are potential investments, the extraction of northern minerals by foreign interests and the compatibility of these with Canada's domestic and foreign policy objectives. EBI is also concerned with obtaining maximum industrial benefits for Canada from northern resource development.

The Commodity and Energy Policy Division (ECW) coordinates activities on the international aspects of the development of large energy projects in the arctic. In 1978 this involved contacts with foreign countries interested in the commercial and environmental implications of the Arctic Pilot Project, a proposal to produce and ship liquified natural gas (LNG) from Melville Island to markets in eastern North America or Europe. The division is involved with proposals for participation by other countries in the exploration and development of oil and gas reserves in the Beaufort Sea as well as the arctic islands.

The Legal Operations Division (FLO) ensures that arctic activities and programs are consistent with existing and evolving principles of international law. For example, FLO oversees the application of Canada's rights and duties as contained in the 1958 Convention on the Continental Shelf. In consultation with departments and agencies having specific responsibility for surveillance of coastal waters and for enforcement activities, FLO is concerned with transit uses of Canadian arctic waters and provides the chairman of the interdepartmental Panel on Arctic Waters. FLO coordinates Canadian action taken internationally to prevent ocean pollution as set out in the 1970 Arctic Waters Pollution Prevention Act.

During 1979, the department coordinated discussions between Canadian and Danish authorities relating to resource development and marine environment in the eastern Canadian arctic and west Greenland. Discussions related to liability and compensation in the event of trans-frontier pollution and a draft agreement for cooperation relating to the marine environment. Cooperative arrangements for the prevention and clean-up of marine pollution were also discussed and a 1979 Canada-Denmark Marine Pollution Contingency Plan was concluded.

FLO concentrated on the United Nations Law of the Sea Conference. It worked to have the conference recognize the special rights and responsibilities of coastal states to set standards for the prevention of pollution from ships operating in arctic ice-infested waters.

The Bureau of United States Affairs (GNP) coordinates Canada-United States relations in the arctic. The General Relations Division of this bureau (GNG) deals with science, technology and communications. The Transboundary Relations Division (GNT) coordinates bilateral energy, environment and transportation questions, particularly along the 1000 km Alaska/Yukon border. The division is responsible for the foreign policy aspects of northern pipelines, which include monitoring United States activities regarding the Alaska Gas Pipeline and the termination of the Haines-Fairbanks Pipeline. It coordinates the foreign policy aspects of Beaufort Sea oil drilling, ongoing consultations with the United States regarding environmental aspects of the Canadian exploration program and forthcoming US lease sales. GNT is concerned with a series of arctic environmental questions such as transboundary pollution, migratory birds, an agreement to protect the porcupine caribou herd, bilateral cooperation in creating and managing parks and historic sites, designating and managing wild rivers, and management of transboundary rivers. It also follows the progress of legislation now before the US Congress on Alaska National Interest Lands to ensure that Canadian interests are protected. In transportation, it has been responsible for the coordination of foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project), the Yukon and White Pass Railway, and border crossings.

The European Bureau has general relations with the Nordic countries (Europe II and III Divisions) and the USSR (Europe I Division). Europe II Division - Denmark (Greenland) - and Europe III Division - Norway, Sweden, Finland and Iceland - handle many of the exchanges and activities between Canada and the Nordic countries on issues related to the North. Europe III Division heads the Circumpolar Affairs Panel set up by External Affairs in April, 1979, to promote greater coordination on northern foreign policy questions. Europe I participated in the political consultations with the USSR Deputy Foreign Minister April 24-25, 1979, during which northern development was discussed.

The Department of External Affairs works with scientists, senior foreign editors or other media personnel and foreign government officials who wish to tour the arctic. Activities that encourage an interchange of ideas on problems peculiar to all arctic areas come under the department as well.

The Bureau of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the arctic for approximately 25 heads of diplomatic missions accredited to Canada. Thus, each head of a diplomatic mission is assured of an opportunity to visit the arctic during his tour of duty in Canada.

The External Information Programs Division (FIA) provides Canadian diplomatic missions with up-to-date material on developments in the North, pertinent news releases from other government departments and agencies, background publications, and response sheets on the Inuit and Indians. Much of the information is aimed at key opinion makers abroad such as foreign journalists, government officials and parliamentarians, academics and businessmen.

Films on the North are sent to Canadian missions. The division's Canada Weekly, published in three languages, details news events of the North. Photosheets, printed in nine languages, offer a visual impression of the North's geography, history, economy, culture and population. More detailed information is given in the Reference Papers series. Specific papers are devoted to the Inuit, Indians and northern transportation. FIA normally sponsors or facilitates visits of foreign journalists and film crews to the North.

The Division of Cultural Affairs (FAC) is responsible for travelling exhibitions of Canadian art including two collections of Eskimo prints from the department's permanent collection and Inuit Retrospective, belonging to the National Museum of Man. Currently they are circulating in Africa, Australia and western Europe.

The Multilateral Cultural Relations Division (FAN) handles coordination between the Canadian agencies and the UNESCO Secretariat for the inclusion of Canadian sites on the World Heritage List. Two of the four Canadian sites on that list are in the North: the Kluane National Park in the Yukon and the Nahanni National Park in the Northwest Territories.

To facilitate travel by persons residing in remote northern areas, the Department of External Affairs' Passport Office (FPO) prepared a passport information sheet. Supplies for distribution were sent to the Northern Operations Branch Department of Indian Affairs and Northern Development in the Yukon. The pamphlet provides directions on how to apply for a passport and directs attention to the services provided by the regional passport offices across the country. It also details the procedures to follow in the event of an emergency travel situation.

Several information services are being extended to the two territories. A map of the Commonwealth and a Commonwealth Day poster and "teacher guide" were distributed to schools in the North. The department "Consular Awareness" program distributes the travel advice booklet "Bon Voyage, but . . ." in the North. From year to year, a group visit of Canadian mayors to NATO and the EC in Brussels includes a representative from either the NWT or Yukon.

Federal Environmental Assessment Review Office

FEARO

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Responsibilities

A federal Environmental Assessment and Review Process (EARP) was established by the Cabinet December 20, 1973, to assess environmental consequences of federal projects and to have these findings appear in plans, decisions, and actions.

EARP covers projects initiated or sponsored by federal departments and agencies, need federal funds, or involve federal property. All federal departments and agencies are subject to the process, except proprietary crown corporations and regulatory agencies which are invited to participate.

EARP is administered by the Federal Environmental Assessment Review Office (FEARO). Its executive chairman reports to the Minister of the Environment.

Under the process, departments and agencies screen proposed projects for potential adverse effects. If the effects are not apparent, a more detailed examination known as an Initial Environmental Evaluation (IEE) is made. FEARO encourages organizations to seek public response in the early stage of planning any activities that may be environmentally sensitive. If either the screening or the evaluation indicates potential significant effects, the project is referred to FEARO for a formal review.

Each project is reviewed by an independent panel. The Minister appoints panel members from outside the federal public service and FEARO appoints members from within the federal public service.

A panel reviewing a project publishes guidelines for the Environmental Impact Statement (EIS) that is prepared by the organization planning the project. As part of its review, the panel holds public meetings and subsequently submits a report to the Minister. The report describes the major potential impacts of the project and contains conclusions and recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

Review 1979-80

Foothills Pipelines (Yukon) Ltd. proposed to build and operate a buried gas pipeline from Alaska through the southern part of the Yukon Territory for delivery to the other American states. This Alaska Highway Gas Pipeline Project was referred to FEARO in March, 1977, but because major decisions on the feasibility of a number of pipeline proposals had to be made by the fall of that year, the panel was asked to prepare an interim report by August 1. The panel report outlined major environmental issues and identified data deficiencies. An Environmental Impact Statement (EIS) was distributed for public and technical review in January, 1979. Meetings were held in Yukon communities, including Whitehorse, in March and April, 1979. The panel found that Foothills had not provided sufficient information on certain aspects of the project and will reconvene when the additional information is available.

Plans for 1980-81

An Arctic Pilot Project to pipe gas from Drake Point field across Melville Island to Bridport Inlet where it would be liquified and shipped year-round to an east-coast port by ice-breaking ships is now under review. A year-round harbour would be built at Bridport.

The Department of Indian Affairs and Northern Development (DIAND) and PetroCan referred the project to FEARO in November, 1977, and the EIS was received in February, 1979. Public meetings will be held in high arctic communities from April 15 to 25, 1980. The panel's report on the northern portion of the project is expected to be presented to the Minister during the year.

The Dempster Pipeline Project, referred to FEARO in January, 1978, is dormant. The proposal calls for construction and operation of a gas pipeline from the Mackenzie Delta to a point near Whitehorse to join the proposed Alaska Highway Gas Pipeline. Guidelines for preparation of the EIS have been distributed. The panel will hold a review when the EIS has been received.

DIAND referred Eastern Arctic Offshore Drilling off the northeast coast of Baffin Island to FEARO in July, 1977. Two phases of the review, covering Lancaster Sound and South Davis Strait, will be reviewed when the EIS is completed by PetroCan, the proponent.

The Slave River Hydro Project, initiated by Parks Canada, was referred for review in January, 1980. Located at the border of Alberta and the NWT, the proposed hydroelectric installation would be adjacent to Wood Buffalo National Park with a transmission line from Fort Smith, NWT, to Fort McMurray, Alta. The reservoir behind the dam could effect the wildlife and flood land inside the park. A panel will be appointed to review this project. The province of Alberta intends to conduct a two-year environmental feasibility study before it makes definite proposals.

Plans to increase oil production at Norman Wells, NWT, and transport the oil through the Mackenzie Valley south to the Alberta border were referred to FEARO in February, 1980. A panel will be appointed to review this Norman Wells Field Development and Pipeline Project. It is expected to complete its report in 1980.

A Canadian National Telecommunications project to improve communications in the NWT and Alberta by building two microwave towers and support systems in Wood Buffalo National Park was referred to FEARO by Parks Canada in April, 1977. The project has been suspended while other means are examined and potential hazards to the whooping cranes nesting in the park are eliminated. ■

Responsibilities

The department is responsible for fisheries research and management throughout the North. The department implements oceanographic and hydrographic programs and coordinates ocean policies and programs of the federal government.

Arctic fisheries management occurs under two regions, the Pacific (Yukon) and the Western (NWT). Enforcement and inspection programs are performed by fishery officers in Whitehorse, YT, and Yellowknife, NWT and sub-district offices such as Haines Junction, Inuvik and Frobisher Bay. Professional assistance for fisheries and fish habitat management is supplied through regional headquarters in Vancouver and Winnipeg.

The Arctic Biological Station operates outside the network, reporting through the Quebec Region, adding a marine biological research capability to the fisheries northern programs.

Information has been gathered under three headings: Fisheries Resources, Fish Habitat Management and Industry Services. Fisheries Resources comprises the conservation and protection of fish stocks, including management, enhancement and associated research. Fish Habitat Management comprises measuring the effects of industrial development on fish resources and habitats, research into northern ecosystems' response to adverse impacts, departmental input to the Federal Environmental Assessment and Review Process (EARP) and development of terms and conditions for licences issued by other government departments. Industry Services monitors processing plants, provides advice in handling, processing, transportation, storage and distribution of fish products, carries out laboratory analyses on fish products, water and ice samples; inspects freshwater species and fishing vessels, administers grant assistance programs to fishermen and the fishing vessel insurance coverage program; provides advice and guidance to industry on development of fishing gear, equipment and processing.

Yukon Territory

Fisheries Resources

Review 1979-80

Fishery officers sampled stocked lakes to assess stocking programs.

A new sub-district office was opened in Haines Junction to improve coverage in the western section of the Yukon.

The Klukshu River salmon counting fence was operated for the fourth successive year. The fence, located about 100 yards upstream from the mouth of the river, counts adult migrating salmon. In addition baseline biological information (sex, age, length) was collected as a basis for management.

The following counts for each species were recorded in 1979: sockeye, 12 292; chinook, 4 404; coho, 175. These counts were well below the 1976-78 averages (sockeye, 21 783; chinook, 2 466; coho, 1 453). A report is being prepared on the results of the 1979 program.

Wellesley Lake, renowned for the exceptionally large lake trout available to anglers and given "trophy lake status" in 1977, was sampled in 1979 to assess the size of catches and numbers of fish released. Three three-day trips to the lake to interview anglers was insufficient to draw any definite conclusions. A more intensive program is required.

The commercial salmon fishery in the Yukon River at Dawson was sampled in 1979 to collect basic biological information on chinook salmon. This information will be useful to long-term management of the fishery.

Plans for 1980-81

Further development of Yukon salmon fisheries is proposed. Negotiations with the U.S. will consider equitable harvests to Canadians from Yukon river stocks.

Additional data on fish stocks in Yukon streams will be obtained and fisheries development in the Beaufort Sea area investigated.

Fish Habitat Management

Review 1979-80

Field studies and discussions have been undertaken with DPW to assess the impact on fisheries of Shikwak Highway Project and the proposed paving of the Alaska Highway from the BC-Yukon border to Haines Junction.

Briefs were presented at several public hearings geared to develop "Interim Guidelines for Issuance of Authorizations to Use Water for the Purpose of Placer Mining in the Yukon Territory".

The rapid expansion of placer mining has required the department to intervene at several water licence application hearings.

Contributions were made to the development of terms and conditions for construction of the Alaska Highway Gas Pipeline and a brief presented to EARP hearings in Whitehorse in April, 1979. A Yukon pipeline crossing schedule is being prepared in cooperation with Foothills Pipeline Company.

A field reconnaissance, along the Alaska Highway Gas Pipeline route and Dempster Lateral route, was conducted.

Negotiations have been undertaken with the Northern Canada Power Commission into the modification of fish passage facilities in the event of power expansion programs. The negotiations include consideration of a mini-hatchery aimed at offsetting turbine-related killing of juvenile salmon.

A radio-tagging study of adult chinook salmon was undertaken near Whitehorse Rapids powerhouse in August, 1979, to determine the period of delay and the effectiveness of the fish passage facilities. It was established that salmon were not attracted to the powerhouse tailrace and that the fishway and barrier dam were functioning properly.

An update was made on the probable impact on fisheries of a diversion into Aishihik Lake for hydro-electric purposes. Estimates of possible effects of erosion of new watercourses, changed lake morphometry and other environmental impacts were considered before the diversions could be undertaken.

Habitat protection personnel contributed to a Yukon River Basin Preplanning Study initiated by the Department of Environment. The study, to determine knowledge about the Yukon system and information needed before a Water Management Plan could be developed, concluded that a considerable increase in fisheries resource information was required.

Staff reviewed preliminary and final reports on Cyprus Anvil Mine's proposed tailings pond expansion, contributed to a joint DFO-DOE brief to the YT Water Board public hearing on the Cyprus Anvil Mines water licence renewal, and reviewed Whitehorse Copper and United Keno Hill Mines Water Use licence renewal applications.

Plans for 1980-81

Habitat Protection staff will participate in an inter-agency resource inventory and research program associated with the placer mining industry and review conventional mine developments and pesticide application programs. Negotiations will continue with Northern Canada Power Commission concerning the proposed expansion of the Whitehorse Rapids facility and the Aishihik diversion.

Northwest Territories

Review 1979-80

Fisheries Resources

The research station at Nauyak Lake on the Kent Peninsula continued its work on arctic char. Results to date indicate that the life history of this species is extremely complex. In spite of large stocks, annual production is low. The information is essential to planning efficient management strategies. The station will terminate the present phase of operations in 1981.

The program on Experimental Whitefish exploitation centered on Chitty Lake, north of Yellowknife, is now in its ninth year. Sampling was at a relatively low level, as the recovery is complete. A new program of exploitation under conditions comparable with those of a commercial operation will be inaugurated.

Activities in fishery management included the continuing creel census, biological sampling and tagging studies on lake trout in Great Bear and Great Slave (east arm) Lakes. The reduced possession limits resulted in these two lakes being managed as "trophy sport fisheries". Monitoring of the other inland sport fisheries was carried out in the Hay River (for walleye), Kakisa River (for arctic grayling), Mackenzie River - Brabant Is. (for arctic grayling), Yellowknife (for lake trout, walleye, northern pike, whitefish) and Kee-watin - Kasba Lake (for lake trout and northern pike). The growth of stocked rainbow trout in Polar Lake was studied. A questionnaire survey of sport fishing in the Yellowknife and Hay River areas was carried out.

A program on monitoring the whitefish subsistence fishery was initiated on Great Slave Lake. The unusually high presence of chum salmon in the Liard, Mackenzie and Slave Rivers and on Great Slave Lake was studied during late fall.

Monitoring of commercial fishing on Great Slave Lake measured the effects of a reduced gillnet mesh size on the whitefish stock. In addition, a tagging biochemical genetic study was initiated to differentiate populations and/or sub-populations of whitefish in Great Slave Lake. The inconnu commercial fishery at Buffalo River - Great Slave Lake was monitored and a fisheries gillnetting survey done on Tathlina Lake.

Monitoring of the arctic char commercial fishery on the major rivers in the Cambridge Bay area checked catch, age and growth of the populations. A fish fence at the Elalluk River (Wellington Bay) accounted for more than 180 000 anadromous char moving into the system. The domestic-commercial arctic char fishery at Paulatuk was monitored. The two-year preliminary assessment study on arctic char in the Gjoa Haven-Pelly Bay area was initiated in conjunction with the NWT government. The Keewatin coastal arctic char domestic-commercial fisheries were monitored with assistance from the NWT government.

The test fishery program for arctic char continued on Baffin Island. Studies on the domestic (Salmon River - Pond Inlet) and sport (Koluktoo Bay-Robertson River) fisheries were initiated with assistance from PetroCanada.

The live-capture at Churchill of six beluga whales by Sea World was supervised. Funding was provided for a brief survey of the beluga stocks in the Cumberland Sound area.

Thirty-one scientific permits for studies on fish and marine mammals in the Northwest Territories were processed.

Plans for 1980-81

Inland sport fisheries will be monitored in the Hay River, Kakisa River, Yellowknife area, Great Bear and Great Slave Lakes and Keewatin (N. Henik Lake) area. Studies to assess the sport fishery potential along the Liard and Dempster Highways will be initiated.

Stock assessment studies on Great Slave Lake will continue. A fisheries survey will be carried out on Gordon Lake.

The assessment of arctic char stocks and monitoring of the Cambridge Bay area commercial fishery will continue. The domestic-commercial arctic char fisheries will be monitored in the Mackenzie Delta (Aklavik area) and Keewatin coast (Rankin Inlet). The second year of the two-year assessment for potential arctic char fisheries in the Gjoa Haven - Pelly Bay areas will be carried out.

Assessments of the sport fishery at Koluktoo Bay and domestic fishery on the Salmon River, both in the Pond Inlet area, will continue.

The arctic char project on the Kent Peninsula and the experimental whitefish exploitation studies will continue.

Fish Habitat Management

Review 1979-80

The Liard Highway study completed the second of a three-year program to evaluate the effects of culvert construction on the fish population of several small streams crossed by the highway. The project included studies on the effects of construction on hydrologic conditions, fish habitats and fish passage crossing design.

The second year of Beaufort Sea-Mackenzie Delta project was completed. Fish resources and migrations along the Tuktoyaktuk Peninsula were monitored and an extensive study was undertaken of a coastal embayment and its freshwater drainage system. Approximately 1.3 million fish passed through a monitoring fence to upstream lakes.

At the Saqvaquac research study area, north of Chesterfield Inlet, phosphorus and nitrogen were added to selected lakes to determine whether arctic systems respond to increased nutrient loadings as do temperate systems. The effects on nutrient budgets, primary productivity, benthos, zooplankton and fish, were monitored.

The second year of a three-year study of the Slave River Delta was completed to monitor macronutrients and evaluate spawning potential of river reaches above the Delta.

Arctic Land Use mapping surveys of approximately 260 000 km² of the back lowlands were undertaken in 1979. Maps have been prepared and a report issued describing survey techniques, characteristics of the watersheds and detailed catch information.

Personnel participated in reviews of several major industrial developments in the region. These included offshore drilling in northern and southern Davis Strait; the Arctic Pilot Project for transportation of liquefied natural gas from the Arctic Islands; release of offshore drilling acreage in Hudson Bay; harbour development dredging in the Beaufort Sea; the Polar Gas Pipeline project; and development of draft guidelines for production of oil and gas from the Beaufort Sea. In addition, the section played a role in development of the government's Green Paper for Lancaster Sound.

Plans for 1980-81

Studies of the fish resources of Tuktoyaktuk Harbour, the coastal areas from Tuktoyaktuk to Richards Island and of anadromous fish in outer Mackenzie Delta will be included in the Beaufort Sea-Mackenzie Delta project.

The study of eutrophication processes and effects in arctic systems will be continued at Saqvaquac.

Study of the Slave River Delta to investigate the significance of fish resources and the potential for disturbance will enter the last of a three-year program.

Arctic Land Use mapping surveys of the watersheds of northern Baffin and Devon Islands will be undertaken.

Personnel will participate in the public hearings for the Arctic Pilot Project and the Lancaster Sound Green Paper. A statement of DFO concerns will be developed for EARP on the planned hydro development of the Slave River and proposed oil pipeline from Norman Wells to northern Alberta.

Industry Services

Review 1979-80

Certified processing plants were monitored to ensure that construction and operating requirements were maintained. Advice and guidance on operating procedures was provided to packing plants.

A study of contaminants from various locations in the Northwest Territories continued with approximately 1 000 samples yielding over 5 000 analyses. Collection of end-of-line samples for analysis and implant surveys and inspection were continued.

The Fishing Vessel Insurance Plan provided low-cost insurance to 45 commercial fishing vessels in the Northwest Territories. Four NWT vessels were added to the 13 already approved for assistance under the Fishing Vessel Assistance Plan.

Whitefish roe harvesting and processing continued this year with more than 25 000 pounds being produced at ten locations, including two sites in the NWT.

Plans for 1980-81

The branch will continue to carry out regulatory inspection of fish products, processing plants, vessels and transportation conveyances. The Fishing Vessel Insurance Plan will still be available as will subsidies under the Fishing Vessel Assistance Plan.

A pulse fishing strategy will be proposed for a number of smaller northern lakes. It would allow heavy exploitation for one season followed by a pause of sufficient length to allow the fish population to recover.

Further development and evaluation of automated winter fishing equipment is planned. The sonar scanner, heated mobile shed and hydraulically-operated net reel and winches are intended to improve fish quality, working conditions and productivity.

Some technological innovations will be proposed to help improve fish quality. A small portable blast freezer, for use in remote fish processing plants, is being designed. The equipment should lower freezing costs and require a smaller initial capital investment. Containers with modified controlled atmosphere will be evaluated to determine benefits for holding and shipping fresh fish from remote locations.

The branch is proposing a number of initiatives that will increase the use of freshwater species by-products, sales of exploited species, and the use of under-utilized species. Included is construction of a pilot fish fertilizer operation, evaluation of the development of whole salt-cured northern pike and tullibee ovaries, and continuation of the work to overcome problems in utilizing species such as burbot, parasitized whitefish and mullet for human consumption.

Arctic Biological Station

Review 1979-80

The station provided information on Canada's northern marine environment, the distribution and abundance of marine mammals and fishes, the ecological factors controlling production, and the reaction of plants and animals to environmental stress.

Aerial surveys of migrating marine mammals, particularly the narwhal, were carried out in Lancaster Sound and Prince Regent Inlet in collaboration with LGL Ltd. The aerial surveys were supported by more detailed observations of the inshore migration from a camp on the cliffs at Cape Hay, northern Bylot Island.

The white whale population in Cumberland Sound was resurveyed from the ground with the assistance of two Inuk hunters from Pangnirtung. The situation was later reviewed with local Inuit at a meeting of the Hunters and Trappers Association in Pangnirtung.

A survey of the breeding habitat of ringed seals and a study of their behaviour during the spring haul-out period were carried out in southeastern Baffin Island from mid-March to early June.

Other studies included participation in a proposed drill-rig site in southern Davis Strait and in an oceanographic cruise in northern Baffin Bay. Further involvement in the EAMES program was centred on M.V. Calanus, used as a platform for a marine ecology study at Brevoort Island, the logistics centre for the oil companies' drilling program in Davis Strait. Good use was made of the facilities of the Ikaluit Research Laboratory at Frobisher Bay.

Plans for 1980-81

A reassessment will be made of the population of white whales in Cunningham Inlet, Somerset Island, following two years of unusually late ice break-up. Animals will be tagged to see if they are the same whales that spend the winter and spring months along the coasts of western Greenland.

A detailed study of the arctic fox in its role as an important predator of the ringed seal will be made at Holman Island in the western arctic.

Studies will continue in Frobisher Bay on the seasonal distribution and abundance of bacteria, production and growth of phytoplankton and seaweeds, and the population structure and biochemical features of macrozooplankton. Further bacterial studies will be carried out under the Arctic Marine Oilspill Program (AMOP) at the proposed experimental site at Cape Hatt, Pond Inlet.

Canadian Hydrographic Service

Responsibilities

The service conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern regions.

Review 1979-80

CSS Baffin continued charting in Ungava Bay and completed a coastal mapping project along the Labrador Coast from Cape White Handkerchief to Button Islands. The latter project was required to compile new shoreline plots to determine baselines from which to draw offshore boundaries. In the eastern arctic, eight hydrographers and four survey launches were assigned to three large Coast Guard icebreakers. As 1979 was one of the worst ice years on record for the eastern arctic, little hydrographic work was accomplished.

A through-the-ice survey was carried out in Penny Strait, Queens Channel and Wellington Channel. Three helicopters and one tracked vehicle were used on this project, which covered an area of 27 500 km².

The survey of the main route from Hay River to Tuktoyaktuk is now complete and up-to-date. Surveys were completed in Wise Bay and in the eastern and western approaches to Summers Harbour. A detailed survey was made of the approach channel to Tuktoyaktuk and reconnaissance work was done in Prince Albert Sound. Surveillance of the artificial islands in the Beaufort Sea was again carried out.

In the development field, research work continued on the "spiked" ice-coupled transducers at Resolute. The Marine Arctic Route Reconnaissance System (MARRS), in modified form, was evaluated in Bedford Basin and the results proved to be of sufficient quality to warrant further trials in an arctic environment. A major problem encountered during arctic surveys was solved as marine electronic systems technicians of CHS Central Region, R and D Division, developed a solar power system. An investigation of the reception characteristics of Omega and Loran-C in the western arctic was also undertaken.

Two trial surveys were carried out in the western arctic in 1979. In the early part of the year three tide gauges were installed in Peel and Franklin Straits and Prince Regent Inlet and in mid-August an extensive tidal survey of Coronation Gulf, St. Roch Basin and connecting waterways was begun. A number of Aanderaa pressure gauges were deployed through the ice for a month-long period in Sverdrup Basin, Queens Channel and Wellington Channel.

More than 40 new editions of existing charts were published and two new charts - a general chart of the arctic and a large scale chart of Bridport Inlet - were put into production.

GEBCO (General Bathymetric Chart of the Oceans) 5.17 of the arctic was produced and 1:250 000 maps were interpreted and drawn for areas of Amundsen Gulf and the Labrador Shelf.

Work commenced on Volume II of the Arctic Sailing Directions.

Plans for 1980-81

CSS Baffin will work on the Labrador Coast and in Ungava Bay. Later in the year, Baffin will work with CSS Hudson on a multi-parameter survey of Davis Strait. Surveys will be carried out in Prince of Wales Strait and in high priority areas in the eastern arctic. The cooperative program with Earth Physics Branch of EMR will resume in McClintock Channel and Peel Sound and surveys will be conducted in the western arctic as well as Loran-C transmission tests.

The arctic tide-gauging program will continue in 1980 with the deployment of Aanderaa instruments during the winter survey in the McClintock Channel and Peel Sound areas.

There is also a possibility of staging an aerial hydrography project in the western arctic to obtain bathymetry by means of air photo interpretation.

Ocean and Aquatic Sciences

Oceanography

Oceanographic investigations in the arctic relate directly to the Arctic Waters Pollution Prevention Act and Ocean Dumping Control Act. Even though industry must bear a large share of the responsibility for environmental observations, the regulatory function requires government to have both knowledge and expertise relevant to arctic oceanography. This includes responsibility for determining physical oceanographic conditions in relation to drilling permits in the arctic.

OAS provides oceanographic information and advice to agencies such as DINA, EMR and DOE concerning the regulatory process, review of industry proposals and environmental studies.

Institute of Ocean Sciences (Pacific Region)

Review 1979-80

IOS arctic activities included extensive field and committee work, administration of Arctic Ocean Dumping Control Act research studies, input into preparation of a Lancaster Sound Green Paper, attempted recovery of moorings deployed by the former Arctic Marine Sciences Section, workup of a back-log of chemical oceanographic data and samples and remote sensing of chlorophyll.

During 1979 the Frozen Sea Research Group (FSRG) made field trips concerned with the oceanography of Bridport Inlet on the southern slope of Melville Island; tested measurement techniques used to determine the heat flow from polynyas; joined other agencies in acquiring field data to develop a computer model for sea ice motion in the nearshore Beaufort Sea; and acquired data at the sill of a polluted Greenland fjord from instruments deployed in 1978. Work continued on the physics of underwater oilwell blowouts and instrument development.

Physical oceanographic studies in Bridport Inlet in March included current metering and recovery and redeployment of tide gauges. An ultrasonic current meter was used in conjunction with a prototype conductivity-temperature chain to examine internal waves.

The second stage of the joint IOS-AES-BIO Polynya Project to test techniques and make preliminary heat flux measurements was undertaken despite adverse conditions. The radio-controlled model aircraft used for temperature observations in combination with mean air temperature profiles from a 4 m mast detected a major temperature drop within 1 m of the water surface. Current meter moorings indicated that, over a 10-day period, tidal flows from the north were consistently cooler than flows from the south, the direction of unbroken ice cover.

In the second half of 1979, FSRG joined the Beaufort Sea Winter Ice Experiment, a government-industry study to develop a computer model to predict the motion of sea ice. Such predictions require an understanding of the combined effects of winds, ocean currents, the earth's rotation and the strength of ice on the ultimate speed and direction of ice drift. A coordinated survey of temperature and salinity to a depth of 400 m, together with ice and atmospheric conditions, was conducted over an area of 100 000 km² in southeastern Beaufort Sea in November and December. Data analysis and modelling continue.

Installation of a current meter on the sill of the Agfaidkovsa Fjord in Greenland showed that relatively high currents could occur during flushing events from dense water spilling over the sill. This confirmed that polluted water, derived from mine tailings disposal in the fjord, were being raised over the level of the sill and transported out of the system.

Laboratory studies of gas hydrate formation and outgassing of oil drops over a decreasing pressure range from 1300-300 psi were completed under a contract to the University of Calgary. The results suggest that, in a blowout at depths greater than 500 m, all the gas would be converted to solid hydrate.

A "salinity sucker", capable of measuring the conductivity and temperature of water while collecting entrained ice crystals on a filter, was constructed to understand in-situ ice formation and growth and apparent super-cooling of waters beneath growing ice. Work continued to provide the definition for the "Practical Salinity Scale 1978". The equations and the definition of salinity were accepted by the IAPSO (International Association for the Physical Sciences of the Ocean) in December, 1979.

Physical oceanographic advice was provided to committees concerned with arctic industrial development. Another of the Beaufort Sea Overview report series "Crude Oil in Cold Water" was published in 1979.

An attempt to recover current meters deployed by the former Arctic Marine Sciences Section from Lancaster Sound and Wellington Sill, using the submersible PISCES IV, was unsuccessful.

Remote sensing of chlorophyll at the sea surface was successfully undertaken over Lancaster Sound and northern Baffin Bay during the summer. Ground truth measurements were made from the MV Theron.

No arctic chemical oceanographic field work was undertaken in 1979 although lead-210 dating of marine sediments in cores previously collected in Amundsen Gulf were processed. Beaufort Sea nutrient and chemical oceanographic data were processed into reports and salinity and dissolved reactive silicate were used to determine the origin and composition of surface water in the southern Beaufort Sea.

Plans for 1980-81

The Frozen Sea Research Group will conduct the final major field operation in the study of ocean-atmosphere heat exchange from a polynya. Data analysis and interpretation will be continued. Further observations will be made in Bridport Inlet to test a model of the circulation. Beaufort Sea Ice Research Project studies and modelling in cooperation with Dome-Canmar will continue.

Planning and preparation for an Eurasian Basin Experiment with a survey scheduled for April, 1981, will involve scientists from Canada, the U.S. and Norway. The project, recommended by SCOR Working Group 58 on the "Arctic Ocean Heat Budget", will study the heat transport and fate of water cooled on the Siberian Shelf. Field operations are proposed to study currents in the major channels of the Sverdrup Islands and the transportation of water through the archipelago southwards from the Arctic Ocean. These studies may be allied to those of the continental shelf moorings for investigation of deep convecting processes and other large-scale variations affecting current fluctuations in the arctic channels. Work will continue on refinement of sonically oriented current meters, salinity chains and the "salinity sucker".

IOS will continue to administer Arctic Regional Ocean Dumping Advisory Committee research proposals, including oil spill experiments. Other projects include DEW Line site cleanup, oilwell blow-out surveillance and harbour development.

Chemical oceanography may be conducted relating to sedimentation, carbon dioxide, trace metals and hydrocarbon chemical variability and physical oceanography related to water transport through the archipelago. IOS will continue to contribute to arctic ocean climate and oceanographic research initiatives, planning and implementation.

Bedford Institute of Oceanography (Atlantic Region)

Review 1979-80

The Labrador Sea has been studied by Atlantic region physical oceanographers for many years and continues to receive much attention. The array of current meters on Hamilton Bank, set in October, 1978, was recovered in August, 1979. The data obtained are being analysed and the moorings have been reset. This project will provide a long time series (about 10 years) of water velocity data to investigate the seasonal and yearly changes in the Labrador current. The analysis, interpretation, and publication of data obtained in the Labrador Sea during earlier years continue.

Work on a wave climate for east coast coastal waters, including Davis Strait into Baffin Bay, continued. Coastal waters comprise the nearshore, the continental shelves, and the marginal seas. The data base for this climate is being expanded from one to three years.

Work towards an improved ocean geoid (mean sea-level service) for Hudson Bay continued. Altimetry data have been obtained from NASA's GEOS-3 satellite and a computer program is being developed to merge these data with other data and gravity and tide models in order to produce a geoid map of the region.

A joint experiment to evaluate the heat budget of an arctic polynya was postponed when the open water froze over. Since the participants were already on site, extensive testing of the equipment was undertaken.

The region provided positioning data in the Lomonosov Ridge Experiment, undertaken in the vicinity of the north pole, to study the nature of this undersea ridge.

A model of the Bering Sea was developed that includes horizontal transport processes. This work was done in collaboration with the Lamont Geological Observatory, USA.

Particular attention has been paid to those regions off northeast Baffin Island thought to be receiving hydrocarbons from seeps in the underlying sediments. Mapping of the hydrocarbons in the sediments and water was used to identify seep "hot-spots". Gas chromatograph-mass spectrometry analyses of organic material in sediments demonstrated the presence of components of crude petroleum, biogenic hydrocarbons and possibly products of high temperature combustion.

Surveys of the incidence of organohalogens in sediments have been carried out in the eastern arctic. No detectable quantities were found.

The interpretation of trace metal data from arctic water samples was completed. Metal levels in Baffin Bay and the Canadian Arctic Archipelago are lower than in most coastal waters and comparable with pelagic levels in the centre of Baffin Bay. Water in Jones and Lancaster Sounds shows the influence of run-off. On the other hand little influence of biological processes in Baffin Bay can be detected. A budget for trace metals in Baffin Bay has been constructed.

Oxygen isotope studies of the upper waters of Baffin Bay, Lancaster Sound, Jones Sound, and Smith Sound were undertaken to define the extent of sea ice meltwater penetration and to estimate the annual cycle of sea ice formation and melt.

During the 1979 summer field season ecological studies were carried out from the Coast Guard vessel Louis St. Laurent in the Lancaster Sound region and from CSS Baffin in Ungava Bay. These investigations were preliminaries to a planned major arctic cruise in 1980 and concentrated on physiology and photosynthesis in cold water phytoplankton populations.

Plans for 1980-81

Most of the work is ongoing and will continue during 1980-81.

Major cruises during 1980-81 include: CSS Hudson to the Labrador Sea in connection with the long-term mooring program on Hamilton Bank; CSS Hudson to Baffin Bay, Melville Bay, Kane Basin, Jones Sound, Lancaster Sound, to conduct marine ecosystem investigations; and CSS Hudson to the Baffin Island shelf to determine the chemical nature of substances released from seeps.

New projects during 1980-81 include an investigation of the influence of atmospheric fallout on the background levels of organic material in the arctic and other marine environments.

Canada Centre for Inland Waters (Central Region)

Review 1979-80

The 1979 arctic oceanography project concentrated on the Sverdrup Basin. The primary objective of the project was collection of current and salinity-temperature data during a solid ice period (March-May). The program's ultimate aim is to design specific dynamics-related experiments with other agencies to examine motion and deformation in consolidated pack ice. Other applications arising from the studies include: provision of baseline data which could assist industry in the planning, design and operation of facilities for the exploration and production of hydrocarbon and minerals in the arctic; baseline data to provide the department with the knowledge for reviewing environmental impact statements; and planning and advising on contingency measures.

Fourteen current meters were moored on transects from Ellef Ringnes Island to Sabine Peninsula (Melville Island) and between Loughheed Island and Cameron Island. The currents are tide-dominated and are higher in Danish Strait (between Ellef Ringnes and King Christian Islands) and Desbarats Strait (between Loughheed and Cameron Islands), attaining speeds of up to 24 and 22 cm sec⁻¹, respectively. Although the general flow is towards the southeast, northwesterly means were observed between Loughheed Island and King Christian Island.

Experiments were carried out at Resolute to test solar panels to power or assist in powering various electrical loads under arctic conditions. A compact portable solar panel-battery system capable of supplying power for a microwave survey transponder for three weeks was built and successfully tested. These units meet the needs of transponders used in typical surveys. Work is progressing well on a larger system capable of supplying a survey or navigational transponder for up to one year.

Plans for 1980-81

The major portion of this fiscal year will be spent building and testing a profiling current meter-CTD system for arctic applications. Current sensing will likely rely on acoustic methods while a small gyro compass will be used to detect direction. The system will be tested in the Sverdrup Basin where a field project is planned for the spring of 1981.

Solar power experiments will continue through 1980-81. Plans call for monitoring the state of the solar panel-battery systems between March and October and the development of long-term solar power systems, battery technology and battery enclosures.

Marine Sciences and Information Directorate

Responsibilities

The directorate participates in policy formulation for OAS arctic involvement, provides representatives to interdepartmental committees on northern development and arctic marine science, archives oceanographic data collected in the Canadian north, and disseminates northern oceanographic data in processed form. It also publishes the Canadian Journal of Fisheries and Aquatic Sciences and other publications containing specific papers and technical reports on arctic marine science.

Review 1979-80

The directorate provided the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice and the interdepartmental Panel on Ocean Management. Staff members served on panels established to carry out Environmental Assessment and Review Process hearings on offshore drilling in Lancaster Sound and Davis Strait. The directorate formulated a program to collect iceberg data in Lancaster Sound, using a radar installation located on Bylot Island; supported a major initiative to develop an operational model for Beaufort Sea ice dynamics and provided direct funding for the Centre for Cold Ocean Resources Engineering (C-CORE) in Newfoundland.

Plans for 1980-81

The directorate will be placing increased emphasis on OAS policy development for northern marine research. It will continue to participate in interdepartmental committees addressing northern marine issues and will provide staff to the EARP hearings on the Arctic Pilot Project. ■

Health

Medical Services Branch

Yukon Region

Medical Services Branch, Yukon Region, administers and delivers health care throughout YT. It also serves as the Territorial Health Department and the program medical officer is chief medical officer for the territory.

The branch operates a general hospital, three cottage hospitals, two nursing stations, ten health centers and four health stations. These facilities are centers for comprehensive public health and treatment programs. In addition, medical services has a School Dental Health Program to provide basic dental care to all Yukon school age children. The branch facilitates community clinical visits by private physicians and dentists and arranges visits of medical and dental clinics to outlying communities. A visiting Medical Specialists Program is operated out of Whitehorse General Hospital.

Costs are shared between Medical Services Branch and the Yukon Territorial Government. The territorial government administers the health care insurance plan and contributes to the capital and operating costs of the health care system.

Review 1979-80

A Community Health Representative Training program was conducted with the cooperation of the Yukon Vocational and Technical Training Centre. Two Community health representatives who trained through this program joined Medical Services' staff in November, 1979. A second training course, with an anticipated enrolment of 10, commenced in January, 1980.

Expansion and renovation work on the Faro Cottage Hospital was completed in 1979. The hospital was expanded from five to seven beds and extensive renovations were done to improve the care available to Faro and vicinity residents.

Studies were completed during the year on the Haines Junction Health Centre. Health Facilities Design Division began design of the new Haines Junction Health Centre complex. The target for completion of this project is mid 1981.

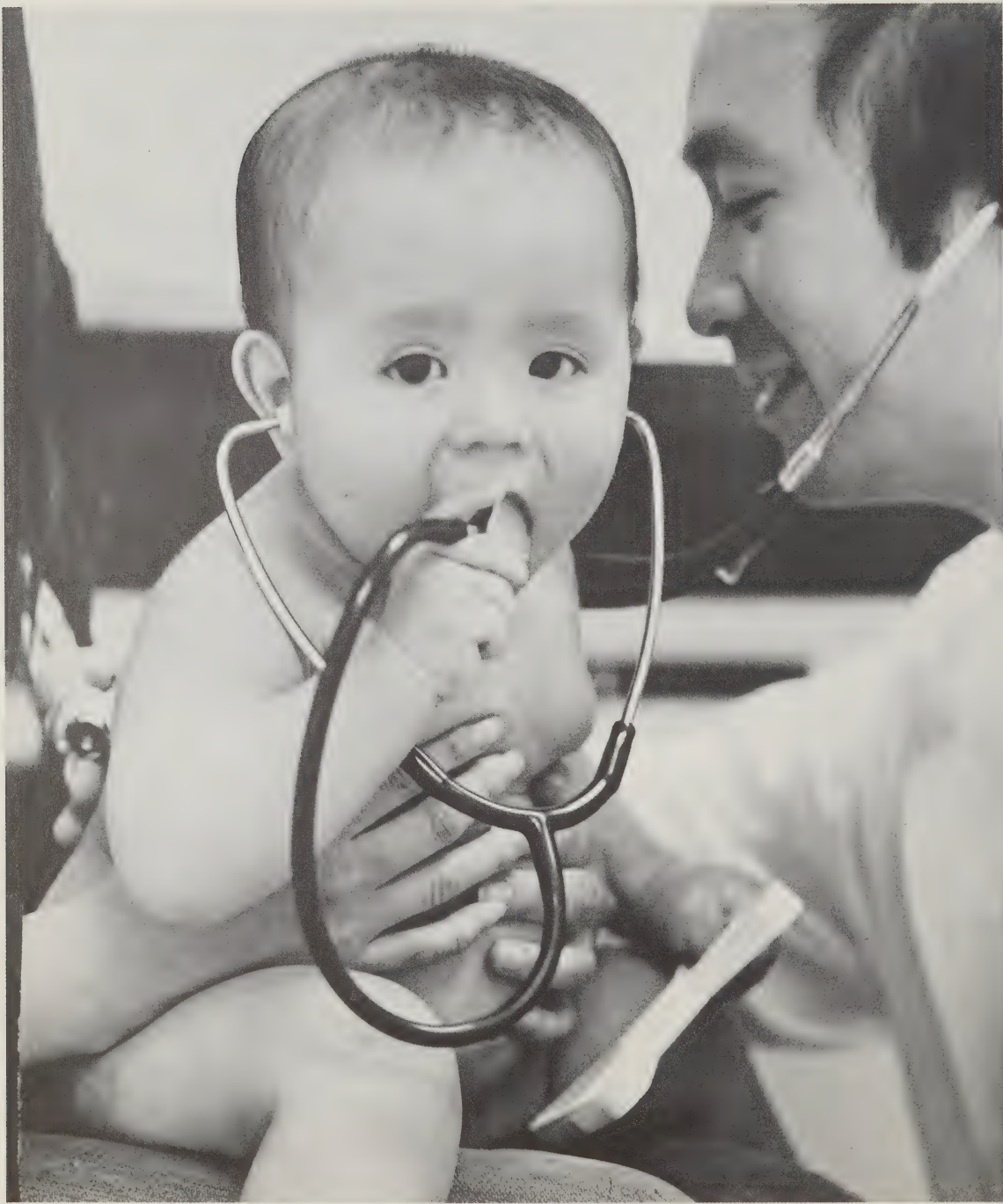
Action was started to improve psychiatric care capability as a result of the deaths of two patients who left Whitehorse General Hospital on their own and subsequently died of exposure.

The Mental Health Program was reviewed with a report and follow-up action expected in 1980.

The 1978 outbreak of tuberculosis in the Watson Lake area has been contained even though public apathy hampered the effectiveness of an anti-tuberculosis campaign. The turnout at the 1979 community survey in Watson Lake was disappointing.

A number of diphtheria carriers were identified in Yukon in 1979. As a result of this investigation more emphasis was placed on adult immunization.

During 1979, 28 cases of fetal alcohol syndrome were identified amongst Yukon children to age 10. Of these, 14 were white origin, 12 were Indian, and two were unknown.



Northwest Territories

Review 1979-80

The Medical Services Northern Region Headquarters moved from Edmonton to Yellowknife in February, 1980.

Negotiations were completed with the NWT government to provide Medical Services with support services in finance and administration.

The Perinatal Infant Morbidity and Mortality study, conducted by the University of Alberta, was released. Plans are under way to follow up on the report's recommendations.

The tuberculosis situation in Ray-Edzo stabilized.

The Dental Therapy School continued at Fort Smith during the year. Eight students successfully completed training and working throughout the regions.

Departmental general hospitals operated at Inuvik, 55 beds; Frobisher Bay, 31 beds; Fort Simpson, 12 beds and one cottage hospital at Edzo with eight beds.

University arrangements to provide practitioner services were continued with the University of Manitoba Northern Medical Unit, McGill University and the University of Alberta.

As recruitment of dentists became critical in 1979, Medical Services Branch asked the Canadian Dental Association to help make practitioners aware of opportunities in the North. These opportunities are either on a fee for service basis or through employment in the branch.

A training program for Community Health Representatives was established with the vocational school of the Northwest Territories. This program was jointly funded by CEIC (Canadian Employment and Immigration Centre) and the branch. Two community health representatives started training at Fort Smith.

Health Services and Promotion Branch

Responsibilities

Health Services and Promotion Branch encourages and assists Canadians to adopt a way of life that enhances their physical and mental well-being and provides leadership and coordination in assisting the provinces and territories to bring health services to national standards.

The Health Promotion Directorate develops and implements, in cooperation with provincial governments and non-government organizations, programs of health information and education. It fosters research to provide information and methodology for establishing programs, strategies and techniques in health promotion.

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relevez le défi**

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- Make your presence felt
- A new professional experience
- A truly enriching experience
- Nursing with Medical Services

- Découvrir un autre monde
- Soyez de la partie
- Une nouvelle expérience professionnelle
- Un service vraiment enrichissant
- Infirmeries/Ouvrières dans les Services médicaux

The Health Services Directorate assists in the development of health care services for all Canadians by assisting provinces and territories to improve the efficiency and effectiveness of health institutions, mental health services, community health, and family planning services.

It fosters research to further the objective of improving the effectiveness of health services in Canada.

The Health Resources Directorate administers the national health insurance programs and makes payments to the provinces in support of their hospital, diagnostic, medical and extended health care services. It ensures sufficient qualified health manpower, through collection of data and exchange of information, and provides funds to provinces under the Health Resources Fund. It also provides information, consultation and guidelines for the design and construction of health facilities.

The Research and Evaluation Directorate finances research projects, demonstration projects and studies, and under the National Health Research and Development program, provides money for training and assistance to researchers.

Review 1979-80

Health Promotion Directorate

The year was the first full year of operation for the Health Promotion Directorate. The directorate continued its national Dialogue on Drinking information program and produced a booklet of recipes for non-alcoholic refreshments titled "The Great Entertainers." The directorate did the ground work for the Generation of Non-Smokers program aimed at youth. Pharmacists across Canada participated with the directorate in the dissemination of information and education materials on smoking and health. Special emphasis was directed at women as part of an effort to reduce the incidence of birth defects and infant mortality.

Nutrition programming was directed at promoting Canada's nutrition recommendations, which encourage Canadians to reduce their consumption of fats, sugar and salt and to balance food intake with exercise. The activities are directed at the elderly, school children, those contemplating weight control techniques, and the food industry.

Extramural Research Programs Directorate

In 1979-80 the directorate, through the National Health Research and Development Program (NHRDP), provided \$9.4 million to health research and related scientific activities in Canada. Among the 204 projects supported during the year were studies relating to the promotion of healthy lifestyles and behaviour patterns among Canadians; the organization of and accessibility to health and medical care, and inquiries into the usefulness of various treatments and interventions.

Health Protection Branch

Through the Health Protection Branch, the department produces an integrated program to protect the public against unsafe foods, drugs, cosmetics, medical and radiation emitting devices, harmful microbial agents, technical and social environments, environmental pollutants and contaminants of all kinds. It enforces the Food and Drugs Act and Regulations, the Narcotic Control Act and Regulations, and the Radiation Emitting Devices Act and Regulations.

An Environmental Health Directorate carries out studies on the adverse effects on human health of the chemical and physical environment. With the Department of Consumer and Corporate Affairs the directorate jointly administers the Hazardous Products Act and with the Department of Environment the Environmental Contaminants Act.

A Laboratory Centre for Disease Control Directorate provides national microbiological reference services and develops improved laboratory diagnostic procedures and other measures to combat communicable disease agents.

Review 1979-80

The federal-provincial advisory committees on environmental and occupational health are concerned with health issues in the North. In particular, the committees focus on the technical aspects regarding housing, sanitation and water systems. Discussions on these matters continued throughout the year.

The Laboratory Centre for Disease Control continued to provide a variety of microbiological laboratory national reference services. Epidemiological surveillance activities on communicable and non-communicable diseases were continued.

Social Services

Social Service Programs Branch

Responsibilities

The Canada Assistance Plan, enacted in 1966, contributes 50 per cent of costs of provincial, territorial and municipal public assistance and welfare services expenditures. The plan helps provide adequate assistance to persons in need and encourages development and extension of welfare services to prevent and remove poverty, child neglect and dependence on public assistance. In addition to the cost-sharing arrangements, the Canada Assistance Plan makes consultant services available to the provinces and territories on income support, day care, child welfare, institutional care and community development.

Review 1979-80

The total contribution under the plan was estimated at \$5 865 000 for the NWT and \$1 093 000 for the YT.



Canada and the Government of the Yukon Territory share the costs of care and after-care services to young offenders committed under the Juvenile Delinquents Act. The cost-sharing agreement, signed in March, 1977, was renewed for the fiscal year 1979-80. Cost-sharing of these services was estimated at \$277 000 for 1979-80.

The Vocational Rehabilitation of Disabled Persons (VRDP) Program, was discussed and interpreted. The program funded by the federal, Yukon and NWT governments, provides vocational rehabilitation to persons unable to work because of physical or mental disability. Rehabilitation coordinators of both territories participated in national and regional meetings.

The Yukon Territory developed a Vocational Rehabilitation Program to make use of the VRDP cost-sharing possibilities. In 1979-80, claims were approved for \$179 000.

In the Northwest Territories, VRDP claims related to the 1979-80 fiscal year will amount to about \$91 000.

Income Security Programs Branch

Family Allowances

Family Allowances, paid monthly on behalf of children under 18 who are maintained by a parent or guardian resident in Canada and subject to Canadian income tax, were paid on behalf of 7 523 children in the Yukon in 1979, and 19 417 children in the Northwest Territories.

For the calendar year 1979 the rate payable in the Yukon and Northwest Territories was the federal rate of \$20 per month.

A new program known as the Child Tax Credit started in January, 1979. This program, administered through the income tax system, provides an annual benefit of up to \$200 on behalf of each eligible child.

Old Age Security

The Old Age Security is a non-contributory program providing a monthly benefit to all persons 65 years of age and over who can satisfy certain basic residence requirements and who are Canadian citizens or legal residents of Canada.

The Act also provides a Guaranteed Income Supplement to pensioners resident in Canada who have a limited income. The Spouse's Allowance is also an income-tested benefit payable to the spouse of an Old Age Security pensioner. In January, 1980, the basic pension was \$182.42.

The maximum monthly supplement was \$149.76 for a single or married pensioner whose spouse was not receiving the pension or a Spouse's Allowance and \$124.52 each for a married couple.

In December, 1979, there were 677 persons receiving the Old Age Pension in the Yukon. Of this number, 368, or 54.3 per cent, received a supplement. In the Northwest Territories there were 1 197 Old Age Security pensioners, with 958 or 80 per cent receiving a supplement. There were 15 recipients of Spouse's Allowance in the Yukon and 54 in the Northwest Territories.

The Family Allowance and Old Age Security Programs are administered in the Yukon and Northwest Territories from the Regional Income Security Programs Office, Edmonton, Alberta.

Canada Pension Plan

The Canada Pension Plan, in existence since January 1, 1966, is a compulsory, contributory, earnings-related plan which, together with the Quebec Pension Plan, covers virtually all employed persons between the ages of 18 and 70 in Canada. The maximum retirement pension in 1980 is \$244.44 per month.

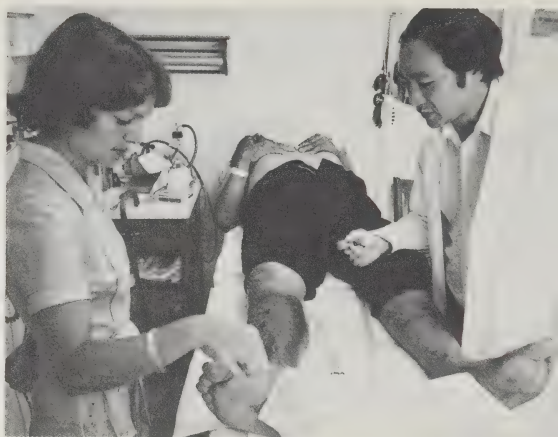
Disability pension is payable to contributors suffering from severe or prolonged mental or physical disability. It consists of a fixed monthly amount of \$57.25 in 1980 plus 75 per cent of the contributor's retirement pension. The maximum monthly disability pension in 1980 is \$240.58.

Beneficiaries by the type of benefit and by territory

Territory	December, 1978		Survivors			
	Retirement Pensions	Disability Pensions	Children's Benefits	Death Benefits	Spouse's Pension	Orphan's Benefits
Yukon	327	28	23	8	154	149
NWT	201	15	23	1	116	241

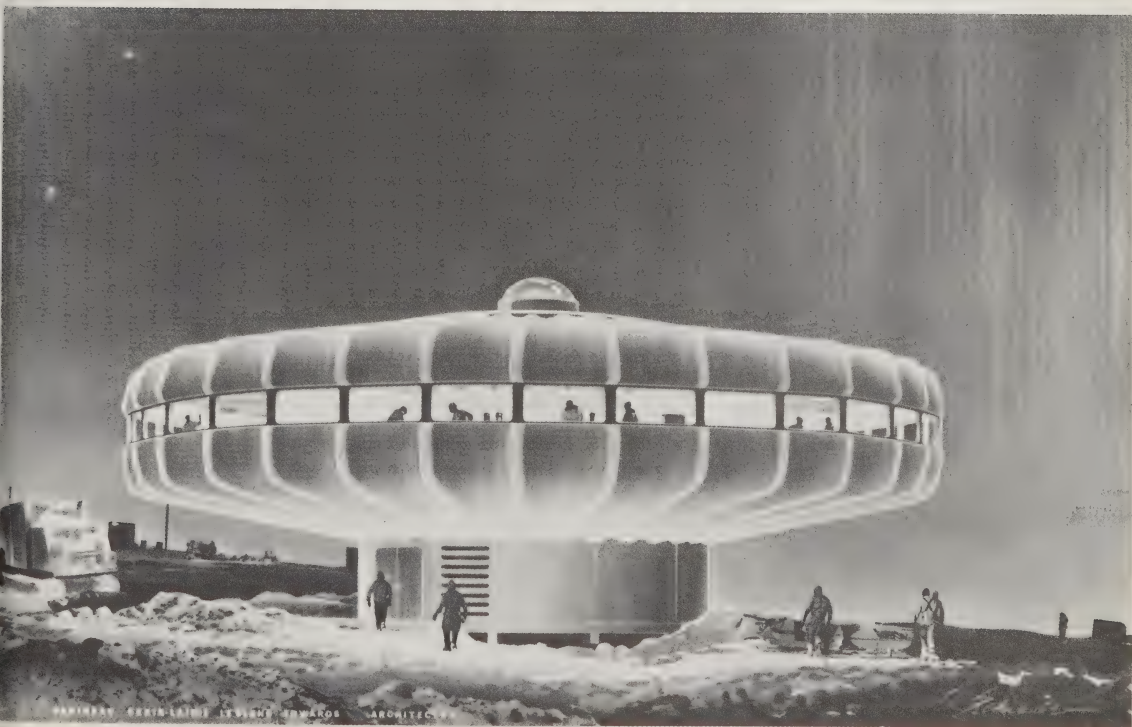


Medical Services



Department of Indian Affairs and Northern Development

DIAND



Northern Scientific Resource Centre at Igloolik, NWT.

Northern Affairs Program

Northern Policy and Program Review Branch

Responsibilities

The Policy Development Division coordinates and advises on policies related to the department's responsibilities in the North. It also examines major selected issues and develops policy options and recommendations.

The Program Review Division plans, manages and conducts reviews and evaluations of ongoing programs affecting the North. The division collects, interprets and publishes information on the annual northern expenditure plans of all federal and territorial government departments and agencies involved in activities related to Canada's North.

Review 1979-80

The main efforts in policy development were directed toward a continuing review of northern objectives and coordination of the Northern Program's overall planning. The division continued managing the operations of the Northern Program Policy Committee.

During 1979-80, the Program Review Division developed procedures for planning and implementing regular program evaluations within the Northern Affairs Program. In accordance with these procedures, a preliminary five-year evaluation plan was developed. Steps were taken to implement the first phase of the plan.

The Annual Northern Expenditure Plan for 1979-80, an annual publication containing data on the northern-related expenditures and employment of the federal and territorial governments, was released during the year. This report displays aggregate expenditure and employment information by agency and category, including an allocation of expenditures to the National Objectives for Northern Canada. Other categories include expenditures by economic function, object, location of responsibility centre, principal benefit and employment. Detailed expenditure and employment information for each program is included along with a description of the program objectives.

In view of the anticipated construction of the Alaska Highway Pipeline, particular attention was given to planning and coordination of government construction in Yukon Territory. Information on planned capital expenditures on government construction projects was compiled and reviewed by the Federal Interdepartmental Coordinating Committee (FICC) in the Yukon.

Plans for 1980-81

The Policy Development Division will concentrate on completing the northern objectives review and on coordinating strategic, operational and work planning operations.

The Program Review Division will implement the program evaluation plan and the plan itself will be updated to reflect changing priorities and circumstances. The 1980-81 version of the Annual Northern Expenditure Plan will be published in the fall. In addition, information on capital expenditure plans for government construction projects in the Yukon Territory will be updated for further review by the FICC and other members of the Advisory Committee on Northern Development.

ACND Secretariat Division

The secretariat continued to provide staff support to the federal Interdepartmental Coordinating and Consultative Mechanism established by Cabinet in 1948.

While activity of one of the major committees - the Committee on Employment of Native Northerners - diminished sharply it reflected increased responsibility and work of the central agencies, operating departments and the territorial governments in pursuing employment programs for native people. The catalytic influence of the committee focused attention on the past problem and prompted corrective action.

Meetings of the other committees comprising the structure considered common problems and possible program development in the areas of northern science, transportation, communications and industrial benefits to Canada from major natural resource developments.

The preliminary work and final drafting were completed for a comprehensive guide to expeditions to the Polar Basin.

The most noteworthy accomplishment of the secretariat was the successful organization of the Canadian element of the 5th joint meeting of Canada-U.S. Arctic Science Agencies. The meetings, hosted by the U.S. and held in Washington, were a continuation of the discussions between scientists from both countries regarding matters of trans-boundary concerns and opportunities for closer cooperation in common scientific interests.

The secretariat produced the 26th edition of the annual report of Government Activities in the North, the only single document that describes the activities of federal departments, agencies and the territorial governments in the North.

The toponymic unit continued as the central point of coordination, scrutiny and verification for naming geographic features in the North and on Indian Reserves, prior to acceptance and approval by the Minister. During the year 569 decisions were made in this activity.

Northern Co-ordination and Social Development Branch

Territorial Relations Division

Responsibilities

The Territorial Relations Division negotiates and administers financial agreements with the territorial governments. It also researches, reviews and promotes territorial constitutional development; and reviews territorial fiscal and legislative policies and development plans. It coordinates the work of the department and the territorial governments in federal matters and transfer of provincial-type services.

Review 1979-80

The division monitored the progress made towards self-government in the North. An accelerated pace of constitutional development for both Yukon and Northwest Territories was characterized by the enlargement of the territorial legislative councils, the strengthening of the executive bodies by appointing additional elected members, and by transferring additional authority to the territorial governments.

A ministerial instrument issued in October, 1979, increased the number of elected members of the Northwest Territories Council on the executive committee to between five and seven members. The executive committee advises the commissioner in the administration of the territories and each member is assigned responsibilities for one or more departments of the territorial government. NWT executive committee members are nominated by the council and formally appointed by the commissioner.

On October 1, 1979, a territorial general election was held in the NWT and 22 members were elected to the council, an increase of seven members over the previous legislature.

On March 6, 1980, the Prime Minister's special representative for constitutional development in the Northwest Territories, the Honourable Charles Drury, reported on his two years of study and consultation with the people of the Northwest Territories. His report contained many suggestions for change in government at the territorial and community levels, including the devolution of federal and territorial government responsibilities. The report discussed the settlement of native claims and proposed a process which would allow residents to decide whether the territories should be divided.

A ministerial instruction of October, 1979, established an executive council (or cabinet) of the Yukon Territory composed exclusively of elected legislators to replace the executive committee. An elected Government Leader was made responsible for determining the size and membership of the executive council. The members serving on the executive council assumed responsibility for the preparation of the territorial budget in addition to the day-to-day administration of the territorial government. A previous ministerial instruction issued in January, 1979, had bound the commissioner to follow the advice of the executive in areas of territorial jurisdiction. Currently, the Government Leader and four other members comprise the Yukon Executive Council.

Effective January 1, 1980, the Yukon assumed responsibility for personal and corporation income taxes in the territory. The actual collection of the taxes will be carried out by the Department of National Revenue under a federal-provincial collection agreement. In addition, plans were completed to transfer the responsibility for road maintenance and reconstruction to the territorial government effective April 1, 1980.

Plans for 1980-81

Constitutional advancement in the Northwest Territories will continue as the government responds to proposals contained in the report of the special representative. Consideration will also be given to the work of the Special Committee on Unity established by the newly-elected Northwest Territories Council and proposals of the Dene Nation and the Inuit Tapirisat of Canada to divide the Northwest Territories. In the Yukon, a Committee on Constitutional Development has been struck by the legislative council and given a mandate "to meet with individuals, groups and organizations for the purpose of discussing constitutional development in the Yukon." The work of this committee will have a bearing on future constitutional change in the Yukon as will discussions with the Council for Yukon Indians.

Negotiations are continuing with the Yukon government for the takeover of the Yukon Small Business Loan Fund. It is anticipated that the transfer will be completed in 1980-81. The fund is a federal program which commenced in 1970-71 and has been administered by the Yukon government. A similar fund in the NWT was transferred to that government in 1977. It is planned, in addition, to complete arrangements to transfer the road maintenance and reconstruction responsibility in the Northwest Territories to the territorial government on April 1, 1981.

Financial Agreements - 1979-80

YT	
Operating grant	\$ 22 893 000
Grant-in-lieu of income taxes	12 877 000
Capital grant	15 481 000
Loans	5 000 000

NWT	
Operating grant	147 876 000
Capital grant	54 815 000
Loans	4 000 000

Additional financial assistance (Contributions) outside the agreements

YT	
Hospital care of Indians	500 000
Medicare for Indians	160 000
Low income rental-purchase housing	208 000

NWT	
Hospital care of Indians	6 746 000
Medicare for Indians and Eskimos	1 011 000

The division coordinated the negotiations for Federal-Territorial Financial Agreements to begin April 1, 1979, for both territories.

Plans for 1980-81

The financial agreements covering fiscal year 1980-81 for both territories provide for assistance in the following amounts:

YT	
Operating grant	\$ 32 209 000
Grant-in-lieu of income taxes ¹	
Capital grant	20 048 000
Loans	5 000 000

NWT	
Operating grant	155 542 000
Grant-in-lieu of income taxes	
Capital grant	59 463 000
Loans	4 000 000

The 1980-81 Territorial Estimates includes an Income Tax revenue figure of \$23 774 000

Effective January 1, 1980 Yukon Territorial Government levied its own income taxes (Estimated Revenue 1980-81: \$15 207 000).

Social and Cultural Development Division

Responsibilities

The Social and Cultural Development Division administers programs supporting social and cultural development of Inuit and other northern native people. The division comprises five sections: Native Liaison, Inuit Art, Cultural and Linguistics, Vocational Training and Administration.

The Native Liaison Section facilitates consultation and liaison between the government and northern native people. It arranges funding for groups to research, develop and negotiate their land claims. It enables consultation with native groups on northern development concerns and interests.

The Inuit Art Section prepares exhibits from the department's collection of Inuit art and crafts for museums, universities and other institutions in Canada and abroad. It also provides information on Inuit art to institutions, the public, and keeps Inuit artists informed of events and issues relating to Inuit art through a newsletter, "About Arts and Crafts," published three times a year.

The Canadian Arctic Producers Cooperative and La Fédération des Coopératives du Nouveau Québec, the central marketing agencies for northern art and crafts, receive market development support. Assistance is also given to projects of individual cooperatives. The Canadian Eskimo Arts Council, appointed by the minister, provides advice on the development of Inuit arts and crafts. Artists are advised and assisted in the protection of their copyright.

The Cultural and Linguistics Section provides translation services in a variety of language dialects and orthographies, publishes a quarterly magazine, *Inuktitut*, and administers a grants program enabling Inuit to participate in a wide range of cultural activities. The section sponsors projects involving the support of Inuit film making, communications, literature and language development. The department's funding and liaison activities in connection with the Inuit Cultural/Education Centres in the NWT and Labrador are conducted through the section.

The Vocational Training Section provides counselling services to northern native students, other native students and other native people in southern Canada. It administers an on-the-job training program, a summer student employment program and arranges special training programs.

The Administration Section is responsible for policy and coordination of the Eskimo Loan Fund and associated financial assistance programs. The five-year Cooperatives' Development Program is administered by this section.

Review 1979-80

No new claims were submitted during the year. The Métis Association of the NWT and the Dene Nation held a series of meetings in an unsuccessful effort to produce a unified land claim organization in the Mackenzie Valley. As a result, the suspension of federal funding for both associations continued.

The final settlement of the Committee for Original Peoples Entitlement (COPE) claim in the western arctic region was scheduled to take place in October 1979, but was delayed owing to overlapping claims of land in the Mackenzie Delta and a review of claims policy mandates.

The Labrador Inuit Association carried on research and development of its land claim proposal, although little progress was made on tripartite negotiations. The association actively participated in hearings related to resources development in northern Labrador.

Inuit Tapirisat of Canada (ITC) strengthened and adapted its land claim negotiation structure. In January, 1980, ITC requested an early start of negotiations and a date was set for late spring, 1980.

As more consultation was undertaken in the arctic on EAMES, EARP, and Arctic Pilot Project schemes, funding was provided for participation of northern native people.

An important exhibition, "Inuit Art in the 1970's," prepared jointly with the Agnes Etherington Arts Centre, Queen's University, circulated nationally. The major retrospective exhibition, "The Inuit Print," a cooperative project with the National Museum of Man, received international recognition.

Special assistance was given to Canadian Arctic Producers in promoting the art of Baker Lake.

Confirmed support was given to Inuit film making activities and the Anik B communications projects of ITC and Taqramiut Nipingat Inc. (TNI). Two special issues of *Inuktitut* magazine were published marking Greenland-Canadian Inuit interaction and the International Year of the Child.

Revision of a major Inuktitut dictionary was begun. During the year the department sponsored workshops on Inuktitut terminology for Inuit translators. An Inuit Cultural Centre was established in Nain, Labrador under the Cultural-Educational Centres Program.

During the year more than 175 northern native people were involved in on-the-job training. More than 60 completed training and obtained employment. Counselling services were provided to 180 native people in southern Canada.

Northern native apprentices carried out practical work projects in the Yukon for Parks Canada during the summer and fall, 1979.

Inuit House, which serves as a social and cultural centre for Inuit in Ottawa, operated during the entire year in Ottawa with an excess of 25 visitors per day. Church services were conducted every Sunday in *Inuktitut* at Inuit House.

Special courses during the year were offered in syllabic touch typing and instructor training for syllabic touch typing. Training was offered in aircraft mechanics at CFB Borden in cooperation with the Department of National Defence. Special training was offered to qualify Inuit as commercial pilots.

During the year a total of 30 loans, valued in excess of \$488 000, were made to Inuit and Inuit-controlled organizations. In addition more than \$1.78 million was paid out in economic development contributions. The five year cooperative development program entered its third year toward establishment of financial stability and improvement of management skills for northern cooperatives.

Plans for 1980-81

As a result of increased activity in northern resource development and environmental and social impact assessments and hearings, the division will continue its consultation funding with northern native associations.

At the same time, it will facilitate loan agreements for research and consult on social and economic development in the North.

Technical assistance will be extended to La Fédération des Coopératives du Nouveau Québec to mount an exhibition, "Things Made by Inuit," for circulation in arctic Quebec.

Canadian Arctic Producers Cooperative will be assisted with marketing through cultural exhibitions.

Priority will be given to expanding the Inuit Art Section's research and documentation centre.

Inuit film-making activities, aimed at the production of suitable television programming for the North, will be supported.

Resource material, such as specialized dictionaries, will be developed to assist Inuit translators. In cooperation with the Government of the Northwest Territories and Inuit cultural associations, support of the development of Inuit literature will be undertaken. A special issue will be published commemorating the first 20 years of Inuktitut magazine.

Special programs will be offered to train northern native people in the operation of local TV facilities. An assessment of air pilot training will be carried out by government and industry. Special emphasis will be placed on cultural programs at Inuit House.

Northern Social Research Division

Responsibilities

The department is responsible for "fostering through scientific investigation and technology, knowledge of the Canadian North and of the means of dealing with conditions related to its future development."

The Northern Social Research Division is a focus for research on social processes in the North; the social implications of proposed programs; and the application of scientific findings.

The Northern Social Research Division plans, conducts, sponsors, encourages and supports research by Canadian universities through the northern scientific training grants program. It supports the Association of Canadian Universities for Northern Studies; develops and maintains a northern social research information and documentation service; interprets research findings for program applications; assists the territorial governments in identifying and conducting research; provides the department and the territorial governments with analysis of social, economic and technological developments in the foreign North; and administers a program of scientific resource centres in the North.

Review 1979-80

Research during 1979-80 was related mainly to problems of social change for native people in the North. A large portion of this work was done by university scientists and others under contract. Division officers supervised and coordinated programs in northern demography, renewable resources, land use, the evolution of self-government in the foreign North, Athapaskan language, the use of alcohol and the social, economic and technological aspects of off-shore drilling activities in the foreign North.

The film Sami Herders, produced by the NFB and the Northern Social Research Division, won a blue ribbon at the 21st Annual American Film Festival in New York in 1979.

Gathering and disseminating scientific, technical and other information about the Canadian and foreign North was another activity performed during the year. The Information and Documentation Service took inventory of recent and current socio-economic research by federal and territorial governments and universities. The Documentation Service, in concert with the Association of Canadian Universities for Northern Studies, developed a permanent Bibliography on Northern Canada.

Core-funding was provided to the Association of Canadian Universities for Northern Studies. At the request of Treasury Board, the division conducted an evaluation of the effectiveness of the association. A report on this evaluation was completed and submitted to Treasury Board in September.

Last year was the 18th of the Northern Scientific Training Grants Program. Grants totalling \$400 000 were awarded to provide northern experience to scientists in training.

Grants were made to: (University in brackets)
Committee on Arctic and Alpine Research, (British Columbia); Boreal Institute for Northern Studies, (Alberta); Committee on Northern Studies, (Manitoba); Institute for Northern Studies, (Saskatchewan); Committee for Arctic and Sub-Arctic Research, (Toronto); Northern Research Group, (Ottawa); Northern Research Committee, (Western Ontario); Presidential Committee on Northern Studies, (McMaster); Centre for Northern Studies and Research, (McGill); Centre for Research in Labrador, (Memorial); Committee on Northern Studies, (York); Northern Studies Committee, (Queen's); Groupe de recherches nordiques, (Montréal); Centre de recherches sur le Moyen-Nord, (Québec à Chicoutimi); Centre d'Etudes nordiques, (Laval); Centre d'ingénierie nordique, (École polytechnique, Université de Montréal); Committee on Northern Studies, (Waterloo); Committee on Northern and Native Studies, (Carleton); Northern Studies Group, (Calgary); Northern Studies Committee, (Trent); Northern Studies Group, (Windsor).

An additional \$25 000 was awarded to Canadian universities for specified research into northern problems.

The division operated the Northern Scientific Research Centre at Inuvik. This laboratory, opened in 1963, provided general laboratory and other facilities for research in a variety of disciplines in the Mackenzie Delta Region. Another Northern Scientific Research Centre at Igloolik opened in the summer of 1975, supporting research in the eastern arctic.

A study was initiated into the manner in which research activities of federal and territorial governments, and private agencies might be better coordinated. The study found that an institutional framework would better reflect northern concerns and permit a greater northern input and benefit.

On April 11, 1979, a seminar, convened by the Minister to explore the proposed Framework for Science and Research in the North recommended that the Minister pursue his efforts and prepare an implementation plan.

Scientific reports and publications were prepared by the division on the results of the research projects under way.

Plans for 1980-81

The division will sponsor and carry out research programs on social questions in northern Canada, the impact of large resource developments on the people of the North, and the social implications of renewable resource development. The Athapaskan Language Project and studies on alcohol and corrections will be pursued in collaboration with the Government of the Northwest Territories and the Government of Yukon. A major research program in northern demography will be launched in collaboration with the Université de Montréal and University of Saskatchewan.

The Circumpolar Unit will collect, review, and update information on the foreign North. A series of maps showing the economic, social and technical development of these countries will be completed.

Northern Environment

Water Resources Division

Responsibilities

The division protects and manages inland water of the Yukon and NWT and arctic marine waters adjacent to the mainland and islands of the Canadian arctic. It also controls the use of land and waters for hydro power developments on federal lands south of 60°. These responsibilities are carried out under the Northern Inland Waters Act, the Arctic Waters Pollution Prevention Act (for non-shipping activities) and the Dominion Water Power Act.

Review 1979-80

Environmental regulation and monitoring of drilling activities in the Beaufort Sea was again a high-level activity to the division. This year four drillships were operating with work being carried out at 10 drilling sites. In addition environmental inspections were carried out at two drill sites offshore in southern Davis Strait. Studies carried out by the division included the confirmation of hydro power potential at selected sites in the District of Keewatin, NWT. Work got under way on a Yukon River basin study with the formation of the Yukon River Basin Preplanning Task Force. A report was published by the task force and the actual basin study is scheduled to get under way next year. Some preliminary studies were undertaken on the subject of coastal zone management in the arctic.

Licensing of water use comes under Water Boards established in each territory under the Northern Inland Waters Act. Approximately 400 applications for water use were received, six licences were issued (three for industrial use and three for municipal use) and 375 applicants were authorized to use water without a formal licence.

Plans for 1980-81

Additional work will be carried out under the Flood Hazard Mapping Program in cooperation with Environment Canada and the territorial governments. Increased activity is expected from water users, particularly placer miners in the Yukon, which will require additional water-use approvals and inspections. The three-year Yukon River Basin study is scheduled to begin next year and the Mackenzie River Basin study will enter its final year. *A second phase of the coastal zone management studies will be undertaken to analyze the Alaskan experience in terms of its applicability to the Canadian coast of the Beaufort Sea. Offshore drilling in the Beaufort Sea is expected to continue at about the same level as in 1979.*

Land Management Division

Responsibilities

The division administers surface rights and environmental regulations for 3.9 million km² of northern Crown lands.

Review 1979-80

Land leases, agreements of sale and reservations exceeded 2300 in the Yukon Territory and 1500 in the NWT.

As a consequence of a joint federal-territorial planning program in Yukon, a final report for the Whitehorse North Land Management Planning Project was completed in March, 1979, and its recommendations were accepted by the Executive Committee Yukon Territorial Government in September. A similar study, Carcross Valley-Marsh/Tagish Lakes-Atlan Road Land Management Planning Project was completed and a draft released in November, 1979. A preliminary planning report for the East Kluane area was prepared in late 1979 to be followed by a public review process and final plan preparation in 1980.

On August 15 in Whitehorse the Minister transferred responsibility for administration, zoning, subdivision regulations and buying or leasing options on all designated and occupied recreational land to the Yukon Government. On August 30 in Yellowknife a similar commitment was made to the Government of the Northwest Territories. On December 13, 1979, it was decided to recommend the transfer of land in and around NWT communities to the NWT government. This Block Land Transfer program had been dormant since 1975.

Cottage lots continued to be provided during the year to meet demand in both Yukon and Northwest Territories. Some 142 lots in Yukon and 70 lots in NWT were released for public consumption in 1979 and development work for future cottage lots continued.

While work on cottage lot development and discussions concerning transfer of responsibilities progressed, the Minister on October 26, 1979, announced a delay in transfers to the Yukon Government because of Yukon Indian land claim negotiations. The announcement put a moratorium on transfers of federal land to the Yukon Territorial Government from November 1, 1979, to April 30, 1980.

In response to a request from the Northwest Territories government the Minister announced on August 30, 1979, his intention to transfer designated lands at Hay River to territorial government control once a detailed official policy for agricultural use is prepared.

The public consultation program for the proposed Bracebridge-Goodsir Inlets IBP Ecological Site (Polar Bear Pass) got under way in July with publication and distribution of a brochure seeking public comment. Expansion of the public consultation program prevented completion by March 1, 1980, the termination date of the withdrawal initiated for a two-year period in February, 1978. On February 8, 1980, an amendment to the original Order in Council was approved extending the withdrawal until March 1, 1981.

More than 440 applications for land use permits for exploration and development-related activities in Yukon and Northwest Territories were received. The potential environmental impact was studied in each case and, following consultation with Environment Canada and communities that might be affected, operating conditions were prepared. Permits were issued for such operations as road construction, mineral exploration, petroleum exploration, campsites, quarrying, land clearing and artificial island construction.

The NWT government and the department monitored the migrations of the Kaminurik and Beverly Caribou Herds (near Baker Lake), to regulate mineral exploration activities (Territorial Land Use Regulations).

As a result of increasing public concern over present and proposed uses of the Lancaster Sound area, a regional study was initiated in 1979 and an Interdepartmental Steering Committee and Working Group was formed to prepare a green paper on information available. The paper was to include identification of the options for management and uses of the area that have been suggested.

The working group has gathered technical background information and begun a Data Atlas and a set of base maps with acetate overlays. A newsletter to keep people informed of progress was initiated in February, 1980. A brochure for Canada-wide distribution was also prepared and distributed.

A visit was made by some members of the working group to several communities in the Lancaster Sound area in March, 1980, to acquaint residents with activities of the program.

A resource inventory and analysis program (under the General Development Agreement signed in 1977) was implemented during the summer, 1979. This is the first year of a four-year study to expand the resource information base of the YT. Total cost of the program is estimated at \$2.4 million. Areas of study have been selected on the basis of resource information needs.

Plans for 1980-81

Work will continue in both territories to implement a recreational lands policy, including transfer of recreational lands to the territorial governments.

The transfer of agricultural land in the Hay River area may proceed in 1980 upon formulation of territorial government agricultural policy. Other elements of a land disposition policy will be discussed and clarified in consultation with both territorial governments in an effort to enhance land management operations in Yukon and the Northwest Territories. Community Block Land Transfers in the NWT are expected to proceed.

Certain lands in Yukon required for pipeline right-of-way purposes are to be transferred to the administration and control of the Northern Pipeline Agency for grant of easement to Foothills Pipelines Ltd. This will be accompanied by a transfer of certain powers from the Minister of DIAND to the Minister, Northern Pipeline Agency.

Amendments to both the Territorial Land Regulations and Territorial Quarrying Regulations will be drafted and considered for legislative action in 1980. Additionally, specialized input to the negotiations of comprehensive native land claims "north of 60" will continue.

Draft management proposals on the Bracebridge-Goodsir Inlets IBP Ecological Site will be prepared by the IBP working group and circulated for comment prior to preparation of the final recommendations.

The preliminary green paper on Lancaster Sound is to be ready in the spring, 1980, and will be forwarded to the communities in the Lancaster Sound region for the information of residents and industry.

In October, 1980, meetings will be held in the communities to discuss the draft green paper and obtain the Inuit views. This will be followed by a workshop in southern Canada for interested organizations to comment.

Input from these meetings will be incorporated into the final green paper which is planned for early 1981.

Further granular material investigations are planned for the Yellowknife area and along the Alaska Highway. The revised Territorial Quarrying Regulations will be implemented. A land sensitivity pilot study will be undertaken to determine whether the Territorial Land Use Regulations can be administered on a more equitable environmental basis.

Interdisciplinary resource inventory studies under the GDA will be continued in 1980-81, 81-82 and 82-83. Also, the need for a data storage and retrieval system will be investigated, to determine whether an EDP system will be required to store the data acquired through these and other studies.

Northern Environmental Protection Branch

Responsibilities

The branch coordinates, develops and recommends policies, strategies, plans and regulations for environmental protection in the Yukon and NWT and in the adjacent offshore regions. It sponsors applied research to support this role.

It develops policies concerning environmental impact assessment of northern development and engineering, recommends northern research and serves as the link between the Northern Program and the Federal Environmental Assessment and Review Office.

Environmental Assessment Division

Review 1979-80

The division has developed environmental study requirements for the regulation of placer mining in the Yukon. One study on resource mapping was completed.

The division reviewed the Arctic Pilot Project Environmental Statement and Supplementary Guidelines for the Federal Environmental Assessment Panel and the Dempster Lateral Gas Pipeline Environmental Impact Statements. It was decided not to submit the Dempster Lateral Gas Pipeline Environmental Impact Statement to the Environmental Assessment Panel for public review until geo-technical issues related to pipeline integrity are resolved.

Other tasks of the division included a Liard Highway Culvert Study, environmental review of Liard Highway design, environmental input to the Northern Roads and Airstrips Division, advice on caribou to headquarters and the region, and the development of Interim Guidelines for Beaufort Sea Oil and Gas Production.

The division has been instrumental in preparation of terms of reference for environmental studies associated with hydrocarbon and mineral development and the development of Initial Environmental Evaluation Guidelines for Urangesellschaft Canada Limited. The division provided advice concerning environmental aspects of hydrocarbon and mineral exploration and development, granular resource use and water utilization.

Plans for 1980-81

The division will continue to plan, coordinate and conduct research on the environmental implications and regulation of placer mining. It will review impact statements for the Esso - Norman Wells oil field and the associated pipeline and complete the review of the Arctic Pilot Project. Advice and assistance will be provided in the further review of Beaufort Sea Oil production. Environmental design evaluation of the Liard Highway will continue.

Environmental Studies Division

Review 1979-80

There were 26 maps of the Land Use Information Series published, covering the Kazan Upland between Eskimo Point and Lynx Lake. Field work was carried out in the eastern part of Keewatin.

Experimental and survey work on the disposal of drilling fluids was continued. Results from monitoring of thermal changes at drilling sumps on Cameron Island and in the Mackenzie Delta have been accepted for publication. Samples of soil and vegetation were taken from old well sites to investigate residual toxicity where various methods of disposal had been used. The second of a series of reports was accepted for publication and three papers were presented at an International Government-Industry Symposium in January, 1980.

Work on the development capacity of northern lake basins continued at Schefferville in northern Quebec. Recommendations arising from this work have been used for other northern projects.

Experiments using plants from Smoking Hills, Cape Bathurst, to revegetate mine wastes at several sites in the Yukon and at Sudbury, Ontario, have been successful. Work to establish commercial seed viability is continuing and the project will soon be handed over to industry for production and application. A bibliography on reclamation and revegetation has been published and production of the series, Ecological Bibliography of the Arctic Islands Archipelago continued with Volumes VII and VIII. A manual on the construction and operation of winter roads was published.

A report on the effect of seismic exploration, especially the effects of explosions on muskrats in the Mackenzie Delta, is being translated for publication. A project to estimate the effects of seismic lines on animal migrations and on trapping returns has been published.

Plans for 1980-81

The environmental studies of the Schefferville area lakes will be continued as will the Land Use Information Series Maps for the Lancaster Sound area and the sump studies in the Mackenzie Delta and Yukon. Oil spill sites are to be revisited to examine recovery of vegetation and the Revegetation of Mine Tailings Study will approach the commercial stage. Terrain-vehicle interaction studies will continue in the Keewatin area. Support is planned for a study of the natural recovery rates for fish and wildlife habitat following disturbance by placer mining in Yukon.

Offshore Environment Division

Review 1979-80

Continued implementation of the Eastern Offshore Marine Environmental Studies (EAMES) Program was the major responsibility of the division. Comprehensive studies were carried out in Northern Baffin Bay and Lancaster Sound. The EAMES Advisory Board met twice during the year.

The Ikaluit Laboratory in Frobisher Bay was used extensively during the summer to support EAMES Projects. During the winter the facilities were used for educational purposes in cooperation with local schools.

The division provided advice to the Arctic Waters Advisory Committee (AWAC) concerning environmental monitoring programs and operating conditions for drilling in Davis Strait. It also provided advice on aspects of the Beaufort Sea drilling operations and the Nanisivik Mine Marine Environmental Monitoring Program.

The division has participated in AMOP (Arctic Marine Offshore Program) through membership in the Management Committee and by providing financial assistance. Petro-Canada's Arctic Pilot Project was assisted with environmental studies.

Contacts were maintained with native groups and the Canadian representatives on the International Whaling Commission to discuss native harvesting of whales. Research contracts were issued to obtain historical information on the use of whales by northern natives.

Plans for 1980-81

Review of the Environmental Impact Statement for exploratory drilling in the Lancaster Sound - Northern Baffin Bay area will be the primary task of the division.

The division will support the experimental arctic oil spill project in cooperation with AMOP.

Further advice will be provided in identifying environmental study needs in the Beaufort Sea.

Forest Resources Division

Forest Management

Responsibilities

This program manages the forest resources of the North with a view to stimulating economic development and employment opportunities for northern residents.



A cargo of fuel goes to an inaccessible fire location near Fort Simpson
Source: Forest Resources Division

Review 1979-80

The total wood production for both territories was down slightly from last year mainly due to destruction of a portion of the productive forest estate by forest fire in the Northwest Territories.

In the Yukon the total estimated production for 1979-80 was 133 107 m³ which consists of 88 954 m³ of sawtimber, 4 151 m³ of roundwood (posts, piling, building logs and mine props) and 40 002 m³ of fuelwood. The figures for the Northwest Territories were 23 945 m³ of sawtimber, 1 919 m³ of roundwood and 9 625 m³ of fuelwood for a total of 35 489 m³. The high price of fuel oil has had a bearing on the fuelwood production increase of more than 35 per cent.

Seventeen sawmills were operating in the Yukon during the year and four in the Northwest Territories. The largest industrial operation was at Watson Lake where Cattermole Timber Limited is expanding the existing processing plant to process approximately 300 000 m³ of wood. This will make Watson Lake a major forest production center. Dry kilns, a machined building log plant, a treated wood foundation facility, a steam turbo generating installation and a larger sawmill will be the major components of the new complex.

The field sampling aspect of the forest inventory of the Lower Liard Forest Management Unit (FMU) in the Northwest Territories proceeded on schedule with about 25 per cent of the most productive forest lands completed. Forest inventory work in Yukon was limited to completion of the photo interpretation for classification of forest cover detail for the La Biche FMU.

The Yukon Lands and Forest Service (YLFS) conducted a number of regeneration surveys on cutover lands in the Liard River drainage near Watson Lake. Results indicate that establishment of a new stand by natural regeneration is a slow process and that in order to properly manage these high sites artificial procedures will have to be instituted. Regeneration trials are already being conducted in that area with the assistance of the Pacific Forest Research Center (PFRC).

A promising aspect of Yukon's forests is seed production. Sweden has shown a strong interest in lodgepole pine seed from Yukon and a large quantity was exported there last year. PFRC has assisted the YLFS by developing a cone prediction system to facilitate forecasting of large crops of cones. They also supply seed inspectors for certification of seed for international use.

Plans for 1980-81

In the Northwest Territories the field sampling of the Lower Liard FMU will continue and in the Yukon a start will be made on the preparation of forest type maps for the La Biche FMU.

A new project will be initiated to assess softwood regeneration on cutover and burned lands. The seed certification program will continue as will the regeneration seeding trials in the Liard River drainage near Watson Lake.

A site for a demonstration forest will be sought in the Yukon to assess a number of harvesting and regeneration techniques.

Forest Fire Management

Responsibilities

Forest fire management is an integral part of northern renewable resource management. The fire program provides protection to communities, timber, power transmission and communication networks, recreation areas, watersheds, erosion-prone sites and community-oriented wildlife areas.

Review 1979-80

In the Yukon the fire occurrence was the lowest since 1964. Of 65 wildfires, 51 required action. A total of 7 348 ha burned. Only 21 of the 65 fires were lightning-caused. However, 99 per cent of the total area burned was attributed to the lightning fires.

Despite the relatively fire-free year, the Yukon Lands and Forest Service utilized its resources to fight fires in neighbouring areas. The Yukon air tanker group of three Douglas A26s, worked 43 fires, including 18 in the Yukon, one in the Northwest Territories, nine in Alberta and 15 in British Columbia.

In the Northwest Territories 380 wildfires burned a total of 1 989 133 ha, almost one-half of it in the vicinity of Fort Smith. Lightning caused 75 per cent of the fires which burned 99 per cent of the total area. Normally, lightning is the annual perpetrator of northern forest renewal but drought conditions existed this year when relatively intense lightning storms moved northeasterly beyond Fort Smith into the Caribou Range.

The British Columbia Forest Service, Department of Northern Saskatchewan and Yukon Lands and Forest Service provided aircraft, personnel and suppression equipment fire-fighting assistance to the Northwest Territories.

As a result of the increased level of fire activity in the Northwest Territories, the Minister of Indian Affairs and Northern Development appointed a panel of three independent forestry specialists to review the 1979 fire-fighting operations in the Fort Smith area and the overall priority zone policy throughout the territories. The panel comprised of Professor Peter J. Murphy (chairman), Associate Dean of Forestry and chairman, Department of Forest Science at the University of Alberta; Stanley R. Hughes, fire management consultant, Naramata, B.C., and John S. Mactavish, consultant in Forest Economics, Fire Research and Forest Ecology, Waverley, Nova Scotia. The panel travelled extensively throughout the Northwest Territories to obtain views on northern fire management. The panel will submit two final reports by March 31, 1980. One report will concentrate on operational matters while the other will deal with northern fire management policy.

In 1979 analog lightning detectors were in operation at Fort Smith, Yellowknife, Fort Simpson and Norman Wells. Through regional coordination of the lightning information received at each location aerial detection patrol routes and fire locations were determined more efficiently than in past years.

In Yukon, site preparation continued at the air base near Beaver Creek. Air tanker facilities and retardant mixing and loading equipment now exist at the base in preparation for the 1980 fire season.

Plans for 1980-81

A major task will be to review the recommendations made by the Fire Review Panel. Subsequent planning could involve in-depth operational and policy considerations.



Initial attack crew relaxes after "winning one" near Fort Simpson
Source: Forest Resources Division

An experimental project to develop an information base for fire and timber management purposes will be reviewed for possible application throughout the Northwest Territories. The one-year project was undertaken by the Canadian Forestry Service and funded through the Department of Indian Affairs and Northern Development. Some of the technology used in the project included computer storage of technical details based on interpretation of Landsat colour imagery, 1:1 000 scale aerial photographs and 1:25 000 scale map information. The study area consisted of 1.5 million ha near Pilot Lake northeast of Fort Smith.

In the Yukon emphasis will be placed on developing fire prevention materials for use at schools and with other groups.

Northern Non-Renewable Resources Branch

The branch manages the oil, gas and mineral resources of the Yukon and Northwest Territories through development and implementation of policies, programs, procedures, regulations and legislation. The branch encourages and provides orderly exploration, development, and conservation of the North's non-renewable resources.

Oil and Gas Divisions

Responsibilities

The Oil and Gas Land Division manages the government's proprietary interest in oil and gas. It handles sales of oil and gas rights, issues permits and leases, maintains a registry of oil and gas rights, and monitors royalty and other revenue functions directly resulting from oil and gas operations.

The Oil and Gas Resources Evaluation Division conducts economic and geological appraisals of individual parcels and evaluates oil and gas potential in the North. It assesses exploratory programs, receives and maintains technical data from these programs, maintains a library of exploration reports for use by the public, and processes the geoscience data to provide information on potential reserves and land values.

The Oil and Gas Engineering Division is responsible for departmental activities concerning control of drilling and production techniques relating to pollution, safe gathering, storing and transmission of hydrocarbons from the territories and adjacent offshore areas. The division ensures that maximum economic recovery of oil and gas is achieved, that all underground fluids not produced are confined to the strata in which they were found, and that proper sharing occurs between the various producers. It ensures that timely recovery enhancement programs are instituted and that oil and gas treatment plants incorporate good engineering practices.

Review 1979-80

Oil and Gas Land Management

Oil and Gas Land Activities during 1979 continued under the Canada Oil and Gas Land Regulations. The first new disposal of oil and gas rights since 1969 was held as submission of exploration proposals were solicited in July. As a result, a single exploration agreement was concluded concerning a block of 770 000 ha in the Arctic Islands.

Total holdings declined by about 15 per cent of the area held during 1978, reflecting maturing of existing permits. More than 31 million ha will be mature in the last half of 1980. As new permits were offset by expiring permits, the total area under lease increased by 400 000 ha. Exploration interest continued in the southern territories and the more costly and remote regions such as the offshore areas of the Mackenzie Delta, the Beaufort Sea, the Arctic Islands, Baffin Bay and Davis Strait. In these areas, special renewals of expiring permits presently exceed 10 million ha. Special renewals are granted under discretionary authority and require that exploratory work escalate annually.

During 1979 about 1400 leases, some of which had been applied for as early as 1972, were issued pursuant to the 1977 amendments to the Regulations. Ten leases with drilling commitments were issued during 1979, over half of which involve drilling operations in the extreme southern portions of the Yukon and Northwest Territories. The amended regulations also established a preferential right for Petro-Canada to select Crown reserve acreage to be held under exploration agreements. Consideration is being given to Exploration Agreements selected by Petro-Canada covering some 10 million ha in the eastern arctic offshore. In order to facilitate discussions respecting native claims in the western mainland region (Mackenzie Valley and Yukon), the selection and negotiation process for Petro-Canada's preferential rights was deferred until August, 1979. Negotiations for exploration agreements on selected lands will follow related major policy decisions to be made in 1980.

Number of issued exploratory rights (including permits, special renewal permits and exploration agreements) and leases with relevant area.

<i>Area</i>	<i>Exploratory Rights</i>	<i>Hectares</i>
NWT mainland	130	2 609 528
Yukon mainland	100	1 451 519
Arctic Islands	2 542	50 654 465
Arctic coast marine	507	9 257 225
Total	3 279	63 672 737

<i>Area</i>	<i>Leases</i>	<i>Hectares</i>
NWT mainland	1 208	2 758 837
Yukon mainland	183	278 981
Arctic Islands	152	376 959
Arctic coast marine	67	178 092
Total	1 610	3 592 869

Revenues Received, 1979 (Calendar Year)

<i>Yukon Territory</i>	<i>Revenues</i>
Permit fees	\$ Nil
Transfer fees	80
Lease fees	200
Rentals	320 195
Forfeiture	Nil
Bonus	Nil
Royalties	23 090
Total	343 565
<i>Northwest Territories</i>	<i>Revenues</i>
Licence fees	475
Permit fees	Nil
Exploration Agreement fees	1 500
Transfer fees	18 105
Lease fees	1 718
Rentals	5 564 312
Forfeiture	40 300
Bonus	Nil
Misc.	31
Royalties	5 136 151
Total	10 762 592
Total for Territories	11 106 157

Exploration Activity

Expenditures by industry on oil and gas exploration in the Yukon and Northwest Territories exceeded \$380 million in 1979, \$40 million less than in 1978. Exploratory and development drilling expenditures decreased by ten per cent to \$360 million while total geological and geophysical expenditures decreased ten per cent to \$21 million.

There was very little geological surface work carried out North of 60° during 1979. Panarctic completed a one crew-month of geological work in the Arctic Islands.

A total of five seismic crew months, totally concentrated in the Arctic Islands by Panarctic, was reported in 1979 (a decrease of 70 per cent from 1978). The two on-ice programs in the islands were on behalf of the Arctic Islands Exploration Group and Panarctic. The seismic programs covered a distance of 785 line km.

Marine seismic surveys were carried out in the Beaufort Sea by Dome, Esso, Canadian Superior, and Union Oil for a total of 8056 km. Eureka Exploration Ltd. and Geophysical Service Inc., carried out reconnaissance in Beaufort Sea seismic programs in 1979 totaling 144 km and 355 km. In addition, Dome carried out site-specific surveys on drill-sites to determine near surface conditions with respect to the occurrences of hydrates, permafrost and shallow water sands. Petro-Canada and Esso completed reconnaissance surveys totalling 6810 km in the Davis Strait-Baffin Bay. The programs provide the operators with a better understanding of the regional and local structural geology of the Baffin Bay areas. In addition, Esso carried out a 125 km marine seismic survey in the Mackenzie River areas across the Norman Wells field.

Drilling activities increased in 1979 with 29 wells, including 18 exploratory and 11 development, drilled - a total of 61 373 m.

Dome/Canmar increased their drilling capability in the Beaufort Sea with the addition of a fourth drillship. Kopanoar M-31 and Ukalerk 2C-50 were fully tested recovering oil and gas, and gas respectively. The Kopanoar M-13 structure is being delineated with the Kopanoar 2L-34 well. Nerlerk M-98, Tarsiut A-25 and Natsek E-56 were drilled to total depth with extensive testing expected in 1980. Drilling commenced at the Koakoak O-22, Kenalooak N-94 and Kaglulik M-64 wells and surface casings were set to shallow depths. The introduction of Dome's ice class 3 icebreaker, the Kigo-riak, and the dredging of Dome's winter harbour at McKinley Bay makes possible an extension of the drilling season next season.

Drilling began in the Davis Strait in the eastern arctic in 1979. Esso Resources Canada Ltd. utilized a semi-submersible platform in 999 m of water to drill the Gjoa G-37 well and Aquitaine commenced drilling the Hekja A-72 well from a drillship in 350 m of water. The latter well will be drilled to total depth and tested in 1980.

A total of nine wells were drilled in the Arctic Islands with Pan-arctic Oils Ltd. drilling from three offshore ice platforms, including their gas discovery Whitefish G-63.

Esso Resources Canada Ltd. drilled a total of ten NWT mainland wells for development and water injection purposes at their Norman Wells oil field. Esso also drilled the Adgo J-27 well from an artificial island in the Mackenzie Delta.

Columbia Gas drilled a water injection well in the Kotaneelee gas field and Aquitaine explored an exploratory well at Alder in the Eagle Plain area.

Production Activity

Gas continued to be produced at the Pointed Mountain field in the Northwest Territories and intermittent production began at the Kotaneelee gas field in Yukon. Oil production and processing continued at Norman Wells with 33 wells producing regularly in 1979. Drilling and construction activity continued at Norman Wells in preparation for the waterflood program to increase oil productivity and conserve natural gas.

Legislation

The Canada Oil and Gas Drilling Regulations were promulgated in 1979 under the Canada Oil and Gas Production and Conservation Act. The Canada Oil and Gas Pipeline Regulations are being prepared for promulgation and the Canada Oil and Gas Production Regulations have been redrafted for an Industry Task Force review in 1980.

The Canada Oil and Gas Geophysical Regulations are being edited in preparation for promulgation in 1980.

The department and the National Energy Board have been asked to approve proposals to transport natural gas from the Arctic Islands by pipeline and combined pipeline - LNG tanker. Review of the proposals will continue through 1980-81.

Environmental and Geoscience Projects

Only three new research projects were undertaken in 1979.

Arctic Petroleum Operators Association (APOA) continued its large investment of effort and money in environmental and engineering research projects in the far North. In 1979 emphasis was on the completion of the projects started under 'EAMES'. The projects dealt mainly with ice mechanics and ice defense systems research. Esso Resources, Aquitaine and other operators completed major environmental research projects in the Baffin Bay as requirement for their application for drilling authorities.

Plans for 1980-81

General activity will be similar to 1979. The main activity areas will be Arctic Islands, Beaufort Sea and development drilling at Norman Wells.

Exploration in the Arctic Islands will continue at the same pace. Three to four wells will be drilled, including at least three from artificial ice-islands. On-ice seismic surveys will be generally restricted to inter-island ice programs.

Dome Petroleum, utilizing four drill ships, expects to spud and complete at least four deep wells in the Beaufort Sea. One well, Tarsiut A-25, which was completed in 1979, will be tested and abandoned. Contingent on favorable ice conditions additional wells may be spudded and drilled to the risk-threshold-depths.

Esso will continue to drill at least one well a year on the mainland of the delta and near-shore delta areas.

In March, 1980, Esso submitted a plan to initiate a total secondary recovery scheme for the Norman Wells field. This will involve drilling of injection and production wells on the mainland, the two islands and from artificial islands which will be constructed in the Mackenzie River.

In the southern territories, several operators will continue to drill shallow and medium depth wells in search of hydrocarbons in Devonian carbonates.

In the Davis Strait the Aquit Hekja A-72 well will be deepened and tested.

Mining Division

Responsibilities

This division manages the non-renewable resources other than oil and gas in the Yukon and Northwest Territories. Responsibilities include the development of mineral policy and mining legislation, the collection of mining royalties, the definition of the mineral potential and delivery of advice to the minister, government agencies and the public on current and proposed mining and exploration developments. The division in Ottawa comprises two sections - Mining Resources and Mining Lands.

In the North all mine and mineral responsibilities are handled by regional directors. Three separate sections are each located in Whitehorse, Yukon and Yellowknife, Northwest Territories. These include Exploration and Geological Services, Mining Lands, and Mining Engineering and Inspection Services.

The Mining Lands Section develops policies, initiates and assists with drafting legislation relating to the administration and disposition of mineral rights in the Yukon and Northwest Territories. The section also collects royalties payable from mining operations in the territories. The territories have been divided into seven mining districts with a mining recording staff responsible for disposition of mineral rights within each district. There is a supervising mining recorder in each territory to ensure that uniform practices are observed in the administration of the various mining acts and regulations.

The Mining Resources Section maintains a microfilm library on all published geoscientific reports and on unpublished assessment reports for Yukon and Northwest Territories. Monthly and annual reports on Mines and Mineral Statistics and Mines and Minerals Activities are produced by the Mining Resources Section. This office looks after assessment and definition of mineral potential in the territories relating to proposals concerning parks, land claims, transportation routes and power developments.

Exploration and Geological Services Sections maintain offices at Whitehorse and Yellowknife. Two core libraries, the H.S. Bostock Library at Whitehorse and the C.S. Lord Library at Yellowknife, preserve diamond drill core data. Each has laboratory facilities for core splitting, diamond-saw cutting, thin-section preparation and core storage. Regional and district geologists carry out mineral property examinations, collect rocks and mineral specimens and advise the mineral industry, government departments and research scientists on geological problems. Department geologists assist prospectors and other geologists in identifying rock and mineral specimens by giving prospector training courses and preparing geological compilation maps on mineralized areas.

The Mining Engineering Section advises on the Mining Safety Ordinances and Mining Safety Rules and Regulations as well as the Blasting Ordinance and Regulations in the Yukon and the Explosives Use Ordinance in the Northwest Territories. Regional mining engineers are stationed at Whitehorse and Yellowknife. They are responsible for compliance with safety legislation in mines, quarries and blasting operations; inspection of mineral claims to ensure compliance with the Yukon Quartz Mining Act, the Yukon Placer Mining Act and the Northwest Territories Canada Mining Regulations. This section also ensures that sufficient mine personnel is trained in mine rescue, recovery operations and first aid; conducting ventilation and dust surveys; monitoring radioactive contamination, and carrying out environmental studies of all underground and surface mining properties.

Yukon Territory

Mining Production and Development

Review 1979-80

Some 1150 Yukon employees, or 11 per cent of the working force, are engaged in hardrock mining.

Mining production sales in the Yukon Territory during 1979 were valued at \$299 564 000 excluding coal and natural gas. Production came from four mines: Cyprus Anvil, United Keno Hill, Whitehorse Copper and Tantalus Butte which produced zinc, lead, silver, copper, gold, cadmium, and coal. The Yukon accounted for 26 per cent of the lead, 11.1 per cent of the silver, 10.3 per cent of the zinc, 1.6 per cent of the gold, and 1.2 per cent of the copper production in Canada. The Cyprus Anvil mine is the first and third largest producer of lead and zinc, respectively, in Canada. In 1979 the Yukon accounted for 1.15 per cent of the value of total Canadian mineral production and for 3.75 per cent of Canadian metal production.

Placer gold mining has been stimulated by the rising price of gold and during 1979 export royalties were paid on 35 074 ounces (1 090 906 g) up 36 per cent from 1978. Production is from 90 placer operations involving 400 people on a seasonal basis on 6905 placer claims and 570 leases.

Cyprus Anvil Mining Corporation milled 2 823 060 tonnes in 1979 to produce 222 073 tonnes of zinc concentrate (50.38 per cent zinc), 117 491 tonnes lead concentrate (61.3 per cent lead) and 28 631 tonnes of mixed lead/zinc concentrates (45.2 per cent combined lead-zinc). These figures represent a decrease of 10 per cent for zinc and 13 per cent for lead production compared to 1978. This was caused, in part, by a strike which lasted from September 17 to October 5, 1979.

The company completed preliminary engineering studies for modification of the mill to accommodate new ores from adjacent massive sulphide deposits. A work force of 563 is employed at the mine.

Tantalus Butte Coal Co. at Carmacks commenced open-pit stripping operations in May and ceased production in late June. Coal from the mine is delivered to the Cyprus Anvil Mine as a backhaul by trucks that transported lead-zinc concentrates to Whitehorse. Cyprus Anvil Mines, owner of the mine, uses the coal for drying lead-zinc concentrates. Coal production during 1979 increased to 23 000 tonnes, up 39 per cent from 1978. A work force of 18 is employed on a seasonal basis.

United Keno Hill Mines Ltd. continued to produce silver-lead-zinc from five underground mines, Husky, Keno, No Cash, Ruby, and Elsa and the open-pit Birmingham mine. Lower grade open-pit ore in 1979 accounted for 45 per cent of tonnage supplied to the mill. In 1979 a total of 111 749 tonnes of ore was processed through the mill. Silver production during 1979 was 77 178 kg, down from 85 152 kg in 1978. A work force of 303 was employed.

Whitehorse Copper Mines Ltd. mined lower grade copper from its underground operations near Whitehorse. During 1979 some 829 235 tonnes of copper-gold-silver ore were mined. Approximately 25 per cent of the operation's revenue comes from gold and silver. The copper ore averages around 1.1 per cent copper. Although reserves are only sufficient to keep the mine operating until late 1982, improvement in mining methods and a discovery from continued surface and underground exploration may keep it operating until late 1983 or 1984. A work force of 204 was employed at the mine.

Preliminary studies are currently under way by Cyprus Anvil Mines Ltd., to examine the development of the additional massive sulphide lead-zinc deposits of Swim, Grum, and Vangorda, recently acquired from Kerr Addison, Mines Ltd., Canadian Natural Resources, and Vangorda Mines Ltd. During 1979 some \$22 million was spent on exploration, development, and engineering studies. Also necessary are extensive modifications to the mill grinding circuit, transportation studies and additional power. Engineering to modify the Anvil concentrator to accommodate the new ores is under way. With the acquisition of these deposits and the newly (1976) discovered DY deposit, Cyprus Anvil now has ore reserves for another 30 to 50 years of operation.

A single housing subdivision, estimated to cost \$6.1 million, will proceed at Faro in 1980.

The dramatic increase in the price of silver allowed United Keno Hill Mines to significantly increase mined and milled tonnage of low grade open-pit ore. Significant additional reserves have been defined. Open-pit ore accounted for 45 per cent of tonnage supplied to the mill in 1979 and for 36 per cent of silver production.

United Keno Hill completed a \$500 000 underground development and drilling exploration program of 295 m of drifting and 1378 m of drilling over 27 holes on the Venus Mine, a gold-silver-lead vein deposit located near Carcross. Results to date have been encouraging and a production decision will probably be reached in 1980. Proven and probable reserves are reported at 70 400 tonnes grading 9.2 g gold per tonne, 246 g silver per tonne, 2.1 per cent lead, and 1.4 per cent zinc.

Vein deposits of argentiferous galena were subjected to underground development and exploration and/or high-grade mining operations.

Iona Silver Mines Ltd. continued its underground development program on silver-lead veins of the Ketza River property some 50 km south of Ross River.

Silver Arrow Mines mined some 1000 tonnes of high-grade silver-lead mineralization from the old Canol Mine Property, 50 km south of Ross River.

Klondike Silver Mines mined 17.2 tonnes of high-grade silver-lead-zinc mineralization from the Freer Creek property on the Yukon - B.C. border, 100 km west of Watson Lake.

Several companies have been rapidly expanding gold placer mining operations. More than 250 pieces of earth-moving equipment were at work in the 1979 season in the Klondike-Sixty Mile area. Most operators utilize conventional stripping/sluicing techniques. However, a few, including Cogasa Mining, have begun using patented gold/heavy mineral recovery plants.

Cogasa Mining invested some \$5½ million over the last four years on development of a plant for gold recovery. Currently one such plant is in operation in the Sixty Mile River area, and four similar plants, each costing \$3 million, are planned for the Forty Mile, Sixty Mile, and Indian Rivers.

Copperfields Mining Corporation, a subsidiary of Teck Corporation, plans to spend \$1.5 million in the Klondike and process 2 300 000 m³ over 10 years. Initial production in 1980 will be 93 300 to 125 000 g (3000-4000 oz.).

Queenstake Resource will reactivate an old dredge at a cost of \$2 million and plans to operate for 10 years in the Clear Creek area.

Canada Tungsten Mining Corp. operated a pilot plant during 1979 at Dublin Gulch for recovery of gold, tin, and tungsten. In 1980 some 150 000 to 190 000 m³ of gravels will be processed.

Mineral Exploration

Review 1979-80

Mineral claims staked and recorded in the Yukon Territory during the year, with comparative figures for 1977 and 1978 are:

Districts	Claims Recorded		
	1977	1978	1979
Whitehorse	2 630	1 547	1 942
Dawson	1 749	1 300	2 175
Mayo	2 854	2 704	3 197
Watson Lake	5 885	3 998	4 012
Total	13 118	9 549	11 326

In addition 2479 placer claims and 446 placer leases, largely in the Dawson district, were registered. This compares to 1978 figures of 1079 and 222 respectively.

Exploration activity continued at a good pace in 1979 with expenditures of \$20 million, up 10-15 per cent from 1978. Exploration projects in 1979 were heavily directed toward discovery and definition of base metal mineralization. The search for stratabound shale hosted and vein-type lead-zinc-(silver) mineralization accounted for about 40 per cent of exploration expenditures. The search for skarn tungsten-tin and copper and porphyry molybdenum-(tungsten) accounted for a further 33 per cent. The search for uranium, gold, coal and asbestos accounted for the remaining expenditures.

Conwest Exploration and Essex Minerals discovered a Clear Lake lead-zinc deposit, 80 km northwest of Faro.

Pan Ocean Oil defined a coal deposit of more than 380 million tonnes in the Bonnet Plume Basin of northern Yukon. Studies are being made on the feasibility of constructing an open pit mine and thermal plant for generation of hydroelectric power.

Amoco Petroleum discovered a porphyry molybdenum deposit of more than 100 million tonnes, known as Red Mountain, 80 km northeast of Whitehorse.

Prism Resources in the Kathleen Lakes area, north of Mayo, discovered several significant silver-lead-zinc vein deposits.

The Selwyn Basin within eastern Yukon continued to be an extremely attractive area for lead-zinc-(silver) exploration. In the Watson Lake area several companies, including St. Joseph Explorations, Cima Resources, Sovereign Metals, and Utah Mines, completed sizeable programs including drilling. On the Mel property, St. Joseph Explorations completed 3004 m of diamond drilling over 12 holes. Reserves are reported at 4.8 million tonnes of 2.05 per cent lead, 5.6 per cent zinc and 52.1 per cent barium sulphate. On the maxi property, Utah Mines completed 1463 m of drilling over 11 holes.

In the MacMillan Pass - Howards Pass area sizeable exploration drilling programs were undertaken on shale-hosted lead-zinc deposits. Placer Development at Howards Pass completed 3659 m of drilling and is planning to go underground in 1980. Hudson Bay Explorations has extended the mineralized zone at the Tom by 2296 m of drilling over 15 holes and plans underground development in 1980. Pan Ocean Oil, on the adjacent Jason deposit, completed 2043 m of drilling.

In the Ross River - Faro area Welcome North Getty Mines, Amax Potash, Cyprus Anvil and Conwest Explorations/Essex Minerals completed sizeable exploration programs. Iona Silver Mines completed underground development work on its Katza River deposits. Welcome North drilled a single hole on the Ruth to a depth of 1244 m and completed further drilling on the Rachel and Sunset properties. Cyprus Anvil completed 15 244 m of diamond drilling, utilizing five diamond drills on the Dy, Vangorda and other lead-zinc properties in the Faro mining district. Conwest Explorations, in a joint venture with Essex Minerals, announced a major sulphide lead-zinc barite discovery at Clear Lake. One 10 m intersection yielded 18.27 per cent zinc, 2.15 per cent lead and 64.7 g silver per tonne. Some 2482 m of drilling over 10 holes was completed in 1979.

In the Mayo area United Keno Hill continued extensive overburden drilling programs over and adjacent to its producing silver-lead-zinc vein deposits. In the Kathleen Lakes area, some 80 km north-east of Keno Hill, Prism Resources undertook an extensive exploration and drilling program to discover and define silver-lead-zinc mineralization in veins and brecciated dolomite. Some 6363 m of diamond drilling was completed over the Val, Vera, Zap and Dee properties.

Exploration continued for tungsten in the MacMillan Pass-Howards Pass area. Amax completed bulk sampling and 1773 m of drilling over 15 holes at the MacTung deposit. Placer Development completed further drilling totalling 1281 m over eight holes on the Clea property. Rio Canex also completed drilling programs on the Woah property.

In the Rancheria-Swift River area tin and tungsten caused much exploration activity. Most programs concentrated on reconnaissance and detailed surveys to define mineralization. Numerous showings were located of tin-tungsten skarns, tin-bearing griesens and tin-bearing quartz vein stockworks. Companies active in this area include D.C. Syndicate, DuPont of Canada and Amax. At the Logtung molybdenum-tungsten porphyry deposit Amax released reserve and grade estimates of 161 million tonnes grading 0.12 per cent tungsten tri-oxide and 0.05 per cent molybdenite.

Amoco Canada Petroleum continued a major deep drilling program to define a large deposit at the Red Mountain molybdenum porphyry deposit. One of the best intersections returned 108 m of 0.31 per cent molybdenite. A total of 6707 m of diamond drilling over 15 holes was completed.

In the area south and east of Ross River exploration was carried out by several companies for tungsten - skarn mineralization. Hudson Bay Mining and Exploration completed 1626 m of diamond drilling over 16 holes on the Risby tungsten deposit. On the Boot property Archer Cathro completed 1414 m of diamond drilling over 10 holes.

In the Mayo area tin and tungsten, both hardrock and placer, were responsible for much activity. Canada Tungsten explored for tin in quartz veins and in breccias in Dublin Gulch and for tungsten in the Potato Hills. Canada Tungsten also set-up a pilot plant placer operation to recover gold, tungsten and tin from gravels in Dublin Gulch. CCH Resources drilled a tin-silver prospect and Cominco, in limited drilling, encountered low grade tungsten and gold mineralization on Scheeite Dome and low grade tin in the Sunshine Creek area.

Uranium exploration was mainly confined to the Tombstone and Wernecke Mountains. Extensive surveys, including drilling, were completed by several companies on properties in the Tombstone Mountains. The larger programs were carried out by Archer Cathro on the Ting property and by Eldorado Nuclear on the Jove property. In the Wernecke Mountains Pan Ocean Oil drilled 1549 m over 17 holes on the Kiwi Lake property (Deer) and 608 m on the Otter property near Fairchild Lake.

United Keno Hill Mines completed underground exploration and development work on the Venus gold-silver mine located near Carcross and a production decision is anticipated in the spring of 1980.

The only significant exploration carried out for copper was in the Whitehorse Copper District where Whitehorse Copper Mines drilled several properties.

Placer gold exploration was focussed largely in the Klondike (Dawson) area and during 1979 several exploration and development projects were undertaken and/or announced.

Barite is used largely as a drilling mud to hold drill rods in-situ during deep drilling for oil and gas. Several deposits were worked on during 1979 and were either solely barite or barite associated with lead-zinc mineralization.

The lead-zinc-barite Mel deposit, if brought to production, will require upgrading of the current barite content from 52.1 per cent to an acceptable grade. The Tan property, near Frances Lake, is owned by Sovereign Metals Corporation and contains a series of barite veins. North of MacMillan Pass the Cathy-Lorraine property of NL Baroid contains bedded barite within a sedimentary package of Lower to Middle Paleozoic age. Minor diamond drilling was completed during 1979. The Rein barite deposits of Union Miniere Explorations and Mining Corp., located just east of the Dempster Highway, contain massive bedded barite deposits. Limited drilling was completed during 1979.

In the Bonnet Plume Basin, some 140 km north of Mayo, Pan Ocean Oil completed a major diamond drill program to define a large subbituminous coal field sufficient to support a mine-mouth electric power development. Measured, indicated and inferred on-sites reserves in excess of 380 million tonnes have been established in four deposit areas.

Placer Development completed exploration and drilling programs on coal seams near Watson Lake.

Northwest Territories

Mining Production and Development

Review 1979-80

Metal mining production in the Northwest Territories during 1979 was valued at \$369 117 000, excluding tungsten which was valued at approximately \$50 000 000. Metal production came from seven mines which produced zinc, lead, tungsten, gold, silver and copper.

The NWT accounted for almost 100 per cent of the tungsten, 17.5 per cent of the lead, 18.7 per cent of the zinc, 10.8 per cent of the gold, and 6.8 per cent of the silver production in Canada.

In 1979 the Northwest Territories accounted for 1.6 per cent of the value of total Canadian mineral production and 4.6 per cent of Canadian metal production.

There were 1822 employees, or 14.4 per cent of the NWT work force, engaged in mining.

Canada Tungsten Mining Corporation completed a mine/mill expansion program raising capacity to 900 tonnes per day. In 1979 the milled tonnage was at a record high of 249 633 tonnes to produce 3 275 000 kg of tungsten trioxide, an increase of 13.5 per cent over 1978. An average of 206 employees were employed during the year.

Cominco Ltd. constructed new offices and shops at a cost of \$1 million adjacent to the new Robertson shaft. A total of 196 471 tonnes of ore were milled in 1979 to produce 2 952 172 g gold and 632.4 kg silver, a decrease of 17 per cent in gold and 33 per cent in silver. An average of 289 employees were employed during the year.

Giant Yellowknife Mines Ltd. produced ore from underground and open-pits. In 1979 the milled tonnage was 377 625 tonnes and production was 2 336 115 g gold and 447 kg silver, a decrease of 21 per cent in gold and 41 per cent in silver compared to 1978. A work force of 347 was employed at the mine.

Echo Bay Mines Ltd. maintained production from the Eldorado Mine. The No. 3 Echo Bay Mine was reopened to recover known ore and to carry out exploration. A total of 36 169 tonnes of ore was milled in 1979 to produce 61 309 kg of silver and 235 663 kg of copper. Silver production decreased by about 10 per cent compared to 1978. A work force of 133 was employed year round.

Terra Mining and Exploration Ltd. and Norex Resources continued mining from the Silver Bear and Smallwood Lake mines. Unforeseen delays in bringing the Smallwood Lake mine to production resulted in an abnormally low production year. The company milled 31 021 tonnes of ore in 1979 to produce 11 201 kg silver and 294 958 kg copper. A work force of 55 employees were at the mine year-round.

Nanisivik Mines Ltd. increased mill tonnage to 615 461 tonnes in 1979 to produce 76 311 000 kg of zinc and 7 647 000 kg lead, an increase of 4.5 per cent for zinc and 6 per cent for lead over 1978. A work force of 221 was employed.

Pine Point Mines Ltd. increased milled tonnage to 2 985 568 tonnes in 1979 to produce 150 769 382 kg zinc and 53 959 603 kg lead. However, metal production declined by 27 per cent for lead and 7 per cent for zinc compared to 1978 because of lower grade ore. A new dragline became fully operational in 1979 for stripping operation. A work force of 571 was employed at the mine.

In November 1979 Cominco announced that its subsidiary, Arvik Mines Ltd., will bring the lead-zinc Polaris deposit, located on Little Cornwallis Island in the arctic, to production by 1982 at an estimated capital cost of \$150 million. The mine will employ 250 and have an annual payroll of \$4.5 million. It will process some 2 000 tonnes of ore per day. Reserves are 22.7 million tonnes grading 14.1 per cent zinc and 4.3 per cent lead.

O'Brien Energy and Resources, in a joint venture with Consolidated Durham Mines and Resources, announced that it will bring the Selco B gold deposit, located at Cullaton Lake 700 km east of Yellowknife in the Northwest Territories, to production at a capital cost of \$16 million. Start-up of production is planned for late 1981 at 180 tonnes per day. It will operate for six to eight months per year. Drill indicated and inferred reserves are 272 000 tonnes grading 25.3 g gold per tonne. Approximately \$2 million has been spent to date on the deposit and some \$3 million in development expenditures is planned for 1980.

Noranda Mines Ltd. will reopen and bring the Camlaren gold mine, located at Gordon Lake 100 km northeast of Yellowknife, to production by 1981 at an estimated capital cost of \$4.5 million. The projected work force is 60. Reserves are 51 000 tonnes of 21.2 g gold per tonne.

Echo Bay Mines is completing a \$6 million underground exploration and development program at the Lupin gold property at Contwoyo Lake, some 400 km north of Yellowknife. A production decision will be made in April, 1980.

Canada Tungsten Mines completed a mine/mill expansion program at Tungsten that doubled production to 900 tonnes per day.

Pine Point Mines has completed erection of a \$21 million drag line for overburden removal in the Pine Point area. An extensive diamond drilling program was completed.

Western Mines continued a large program of development and exploration drilling in the Pine Point area.

Amax completed underground development and bulk sampling of the Mactung Tungsten property at MacMillan Pass.

Terra Mining and Exploration, located on the east shore of Great Bear Lake, continued exploration and development for silver mineralization on its Silver Bear Mine and on the Smallwood vein system at the Terra-Norex Joint Venture property.

Cadillac Exploration Ltd. resumed exploration and development for a short period on the Prairie Creek silver-lead vein deposits. A 20-man crew worked on the property for a short time and shipping of high-grade silver ore via a winter road was considered.

Mineral Exploration

Review 1979-80

Mineral claims staked and recorded in the Northwest Territories during the year, with comparative figures for 1978:

Districts	1978	1979	Claims Recorded	Area (Hectares)
	Claims Recorded	Area (Hectares)		
Mackenzie	919	727 151	780	579 937
Arctic and Hudson Bay	796	693 683	528	454 961
Nahanni	37	19 011	42	17 093
Total	1 750	1 439 845	1 350	1 051 992

Exploration activity continued at a good pace in 1979 with exploration expenditures similar to that in 1978 of \$32 to \$35 million. As in 1978 exploration projects were heavily directed toward discovery and definition of uranium mineralization, which absorbed some 75 per cent of all exploration expenditures. The recent rapid increases of metal prices, particularly in precious metals, caused significant exploration efforts to be directed toward base/precious metals. A request for a permanent injunction by the Inuit of Baker Lake to exclude a 70 000 km² region around Baker Lake for exploration and mining was denied by the courts in late 1979. It is anticipated that exploration activity will increase in this area in 1980.

Uranium exploration continued largely in Proterozoic basins containing sediments and metasediments known to contain several styles of uranium deposits. The main areas where exploration activity was incurred in decreasing intensity include: Baker Lake - Dubawnt Lake, Coppermine - Dismal Lakes - Hornby Bay, Nonacho Lakes, Bathurst Inlet area.

Lesser but significant exploration activity occurred in the East Arm, Great Slave Lake and south of Great Bear Lake. Many sizeable exploration programs, including extensive airborne geophysical surveys, ground reconnaissance and ground detailed surveys, and diamond drilling were completed.

The Baker-Dubawnt Lake areas incurred the largest uranium exploration efforts. Major national and international mining organizations including Urangesellschaft, Pan Ocean Oil, Noranda Explorations, BP Minerals, Essex Minerals, Marline Oil, Western Mines and Cominco completed major exploration programs. Sizeable diamond drilling programs were completed by Urangesellschaft at Sissons Lake on its Lone Gull deposit and at Gravel Hill. Pan Ocean Oil completed moderate to large diamond drilling programs at Yalthkyed Lake and at Nutarawit Lake. Cominco completed drilling over 23 holes at Nowleye Lake. Other drilling programs were undertaken by Essex Minerals and E & B Explorations. In addition another eight or so companies completed smaller exploration programs. Several significant uranium deposits, including the Lone Gull (Urangesellschaft), Amer Lake (Aquitaine), and the 68-2 & 8 (Pan Ocean Oil) have been discovered in the Baker - Dubawnt Lake area over the last few years.

In the Coppermine - Dismal Lake - Hornby Bay area extensive exploration programs, including large drilling programs, were undertaken by BP Minerals; and by Gulf Minerals. Eldorado Nuclear completed extensive reconnaissance programs over much of the western Bear Province. Smaller exploration programs were undertaken by Uranertz, Hudson Bay Oil and Gas and Esso Resources.

In the Nonacho Lakes area Kelvin Energy, Uranerz, Saskatchewan Mining Development Corp., PNC Exploration, and Seru Nuclear completed exploration programs. Kelvin Energy confirmed uranium mineralization in an area at Louison Lake.

Cominco completed exploration programs in the Bathurst Inlet area.

South of Great Bear Lake Chevron, A.G.I.P. Canada, and Major Resources completed smaller exploration programs. Major Resources drilled uranium showings at Beaverlodge Lake.

The search for base metals including copper, zinc, lead, nickel, and tungsten was carried out in five distinct geographical/geological areas of the Northwest Territories: Arctic Islands, Ennadai volcanic belt of southeastern Keewatin, Pine Point area south of Great Slave Lake, Slave structured province, Mackenzie Mountains.

In the Arctic Islands Nanisivik Mines continued underground and surface diamond drilling toward the east end of the lead-zinc Strathcona deposit. Cominco, through its subsidiary, Arvik Mines Ltd., announced that the Polaris lead-zinc deposit on Little Cornwallis Island will be brought to production in 1982 at a rate of 2000 tonnes per day. The capital cost will be \$150 million. During 1979 engineering and feasibility studies were completed.

Gulf Minerals completed ground geophysical and diamond drilling surveys on their copper-zinc deposit near Ennadai Lake. St. Joseph Explorations completed ground geophysical surveys on their Heninga Lake copper-zinc deposits and Esso Minerals completed geophysical surveys on its Ferguson Lake nickel-copper deposit.

Western Mines, Cominco, Gulf Minerals, and Pacific Petroleum completed exploration programs for stratabound Mississippi - Valley-type lead-zinc mineralization in the Pine Point area. In 1979, 20 003 m of diamond drilling, over 124 diamond holes, were completed. Cominco Ltd. and Gulf Minerals completed drilling programs west and southwest of Hay River. The Cominco drilling program involved 5893 m over 16 holes. Pacific Petroleum completed a drilling program on the Cube claims southwest of Pine Point and subsequently dropped its option. Pine Point Mines continued extensive development and exploration drilling programs over, adjacent and distant from their producing lead-zinc deposits in the Pine Point area.

Noranda completed exploration surveys and diamond drilling over seven separate properties in the Mara River, Hackett River, James River and Courageous - Mackay Lakes in the search for volcanogenic copper - zinc - (lead) mineralization. Texas Gulf and Getty Canada completed exploration and drilling programs on their Point Lake and Aylmer Lake properties.

In the Mackenzie Mountains mineral exploration was primarily directed toward discovery and evaluation of stratabound shale-hosted lead-zinc and skarn-type tungsten - copper mineralization. Significant exploration programs, including diamond drilling, were completed on the Gayna River, Vulcan and Howard's Pass lead-zinc properties of Rio Canex and Placer Development. Cadillac Explorations completed a limited amount of development work on the Prairie Creek lead-zinc-silver vein deposits. Moderate to large size drilling programs and other surveys were completed on the Lened and Baker tungsten-copper properties of Union Carbide and Canada Tungsten. Amax completed underground diamond drilling and removed a 272 tonne bulk sample of tungsten - copper mineralization from the Mactung property.

Several production announcements were made in 1979, largely on gold deposits where reserves and tenor were defined some years ago. The rapid escalation in the price of gold over the last 18 months has made these deposits economically viable. Precious metals exploration and development occurred in four distinct areas of the Northwest Territories: Ennadai volcanic belt of southeastern Keewatin, Northern Slave Province, Contwoyto Lake - Bathurst Inlet area, Great Bear Lake, Yellowknife area.

O'Brien Resources, in a joint venture with Consolidated Durham Mines and Resources, announced a production decision for its Culleton Lake gold deposit.

In the Contwoyto Lake - Bathurst Inlet U.S. Borax, Highwood Resources, Giant Yellowknife Mines, and Coronation Gold Mines completed exploration and diamond drilling programs. Echo Bay Mines is currently completing a \$6 million underground exploration and development program on their Lupin gold deposit. At the end of 1979 some 1000 m of underground drifting and extensive sampling had been completed.

Echo Bay Mines initiated underground development and drilling of its Contact Lake silver property. Giant Yellowknife Mines completed geological and geophysical surveys of its Omni claims.

In the Yellowknife area Giant Yellowknife Mines Ltd. and Cominco completed exploration and development drilling at producing gold mines. Noranda Exploration Company drilled at Walsh Lake.

Prospecting for placer gold was undertaken on the Little Keele River and the Liard River.

Viscount Resources evaluated lithium deposits 32 km east of Yellowknife. Canadian Superior Explorations trenched lithium - bearing pegmatites north of Yellowknife and triflex sampled the Beryle I claim in the same vicinity for gem-quality tourmaline. Diapros Ltd. sampled stream sediments in the Interior Plain from Norman Wells to Fort Simpson in the search for diamond-bearing kimberlitic diatremes.

Mining Safety Statistics

There were no fatal mining accidents during 1979 in the Yukon. There were, however, 83 disabling injuries that caused the loss of 1597 person days. Person falls caused most of the disabling injuries (20). Other causes were strain while lifting (16); foreign matter in eyes (8); struck by moving object (6). These causes accounted for 60 per cent of all injuries.

There were two fatal mining accidents during 1979 in the Northwest Territories. One of the fatal accidents was caused by falling rock at the Canada Tungsten Mine in April. The second was in September at Pine Point Mines, also caused by falling hardpan. There were 171 disabling injuries that caused the loss of 19 789 person days. The main causes of disabling injuries were fall of persons (31); strain while lifting (33); caught between two objects (22); struck by moving objects (21). These accidents accounted for 60 per cent of all injuries.

Northern Economic Planning Branch

Regional Planning Division

Responsibilities

The division, with the territorial governments and other federal government departments, formulates and coordinates development plans for regions of the North; conducts studies of general economic conditions in the North; forecasts socio-economic problems and opportunities resulting from structural and institutional changes in the northern economies; and monitors governments' responses to economic development recommendations of public advisory groups and regional economic conferences.

Review 1979-80

The division completed arrangements for the signing of the Canada/Yukon Subsidiary Agreement on Renewable Resource Development, the Canada/Northwest Territories General Development Agreement and the Subsidiary Agreement on Community Economic Development. Programs under both Territorial Subsidiary Agreements are fully under way, and the division is negotiating a new Interim Subsidiary Agreement on Tourism Development for the Yukon Territory. The division conducted an analysis of the Yukon economy to identify development opportunities and general problems of regional development. It is also studying the establishment of native development corporations in the northern territories.

Plans for 1980-81

- During the year the division will negotiate further subsidiary agreements between the federal and territorial governments;
- analyze the territorial economies to identify development opportunities and general problems of regional development;
- conduct regional land use analyses and planning studies to determine ways to resolve land use conflicts and provide options for economic development
- examine small business activities in the northern territories;
- prepare community and economic development profiles of the Lancaster Sound region;
- evaluate different economic programs associated with land claims settlement.

Employment and Socio-Economic Planning Division

Responsibilities

The division develops, in cooperation with the territories, plans and policies that provide equal opportunities for all northern residents. The work involves the analysis of major economic programs and the development of procedures to ensure adequate consultation with northerners, opportunities for training, employment and local businesses.

Review 1979-80

The division monitored native hiring practices in the public service and the petroleum and mining industries. The division worked with industry and the territorial government to ensure that the involvement of northern residents in drilling activities in the Beaufort Sea area was duplicated in offshore activities in the eastern arctic. Other major development projects were reviewed to identify policies and techniques related to development activities in the North. A study was undertaken of the longer term implications of exploratory drilling in the eastern arctic. The Northern Careers Program, operated for the department by the Public Service Commission, was re-organized on a territorial basis. The program has improved its ability to respond to the career interests of northern natives and to meet the staffing requirements of federal departments operating in the North.

Plans for 1980-81

In addition to pursuing policy research and development, the division will review with territorial and other officials the socio-economic aspects of the Polaris Project, the Norman Wells pipeline and field development and exploration work in the Beaufort Sea area. Work will continue on the development of more effective techniques for northern involvement in major projects.

Northern Economic Planning Branch

Northern Roads and Airstrips Division

Responsibilities

The division develops the northern road infrastructure. It emphasizes the coordination of socio-economic, financial and environmental aspects in its planning. Responsibility for maintenance and management of roads is being transferred to the territorial governments.

Review 1979-80

The Dempster Highway was officially opened by the Minister of Indian Affairs and Northern Development and the Minister of Public Works Canada on August 18, 1979, at Flat Creek, Yukon.

Contracts have been awarded to General Enterprises Construction Limited of Whitehorse for the surface gravelling of 105 km of the highway, this section to be completed in 1980. The remainder of gravelling work is expected to be completed by 1983. A committee of representatives of the territorial governments has undertaken implementation of a management plan that will permit year-round use of the highway with minimum adverse impact on the environment. The division is continuing to support studies of the impact of the highway on caribou.

The Liard Highway will link Fort Nelson, B.C., on the Alaska Highway, with the Mackenzie Highway near Fort Simpson, NWT, by 1983. Construction of 67 km of the subgrade of the highway has been completed and work is continuing on the highway. Clearing and some construction is being carried out by Hire North, an agency of the Government of the Northwest Territories established in 1972 to provide highway construction training and employment to native people. Special efforts have been made to arrange small contract packages on the highway so that opportunities would be available for small northern entrepreneurs.

The subgrade of the Carcross-Skagway Road has been completed. The reconstruction of 15 km to the same standard as the new sections remains to be completed. No plans have been made to keep the road open during the winter.

The Shakwak Project involves the reconstruction and paving of the Haines Road from the Alaska-British Columbia border to Haines Junction and the Alaska Highway between Haines Junction and the Yukon-Alaska border. The project began in 1977 as a joint project of Public Works Canada and the United States Federal Highways Administration and was expected to take ten years to complete. The cost, estimated at \$200 million, will be paid by the USA.

Currently only \$58.6 million has been approved by Congress and scheduling has been altered to limit the reconstruction to the Haines Road. In July, 1979, Yukon Native Construction Limited was awarded a clearing and grubbing contract. The Yukon Native Construction Limited was incorporated in January, 1977, to unify small native contractors so that they could competitively bid on major contracts in the Yukon Territory. In 1979/80 the company was awarded, in addition to the contract on the Shakwak Project, a Yukon Territory contract for road work in a light industry subdivision. The company has hired a project manager and is seeking departmental assistance to establish itself as a viable gravel crushing operation.

Provision is made in DIAND's Northern Roads Program for sharing the cost of construction of roads to approved resource development projects. Placer Development Limited has used this program in the construction of an access road from km 187 of the Cantung Road to its Howard's Pass property at an estimated cost of \$1 250 000.

The Northern Exploration Facilities Program, which includes assistance for tote trails, low standard airstrips, small docks, helicopter landing pads and sea plane bases, is administered by the Yukon Territorial government and the Government of the Northwest Territories.

Data Management Division

Responsibilities

The division collects, compiles and analyzes data required for economic planning, evaluation and development. Working with the territorial governments and Statistics Canada, the division promotes the development of data collection systems and models to produce various economic indicators.

Review 1979-80

Estimates of gross domestic product, gross territorial product, personal income and other economic indicators for each of the two territories for the period 1967 to 1974 were completed and published. Work was undertaken to update this information to 1977 and to summarize the results in a report. A draft report of the gross domestic product for both territories for the period 1961 to 1966 was also completed.

A draft report projecting royalty revenue in both territories from oil and gas production has been completed.

The design, development and implementation of the "Data Base System" continued in the field of demographic statistics. Work has also started on a series of monographs which will summarize and interpret the information in the data banks. To complement the system, a new catalogue was published listing the division's holdings in its Report Storage Centre.

The system design, development and implementation was pursued of a computerized mining model (CASHSIM) which could simulate the operations of mining firms in the two territories and determine their cash-flow. The system will be implemented early in 1980-81 and a publication of the results will be produced by the end of that year.

The division undertook a series of ad hoc studies into policy formulation within the Northern Program. A special analysis of the disposition of corporate earnings within and outside the territories was undertaken using data from the economic accounts. A restricted paper was prepared on the subject. A series of economic development scenarios was developed and papers on the forecasts were completed.

Plans for 1980-81

The division will work on the "Data Base System" at an accelerated pace to complete the demographic and labour force/employment modules. The statistical data on the mining and oil and gas industry sectors will be systematically organized during the year for inclusion in the data banks early in 1981-82. A set of monographs on the modules will be drafted and a revised catalogue of the data holdings will be issued. The economic accounts will be updated to 1978 and revisions to accommodate new data will be made to those materials which have already been published for the period 1967 to 1976. Work will commence on development of estimates of gross domestic product by factor cost for each industry sector in each territory for the period 1967 to 1977.

Preliminary work in a number of other fields is being undertaken during the present fiscal year and will be carried into 1980-81. Projections of oil and gas royalty revenues will be made. This work will be done in-house. A number of contracts are being negotiated or considered with academic institutes. Subjects would be: the possibility of deriving timely demographic data from administrative sources; the development of information about native households' consumption patterns, employment, working age and acquisition of assets.

As in the past, the division will continue to be engaged in a number of ad hoc studies concerned with short and long-term forecasts of economic development.

Economic Analysis Division

Responsibilities

The division provides advice on northern development strategies, policies and plans. It does economic analysis of resource development, energy and mineral policies, transportation and communications, renewable resources developments, the native economy, and projects of Crown corporations and government investments.

Review 1979-80

Transportation

The second phase of the study of options for the transportation of mineral products from the northeast Mackenzie District was initiated. A road reconnaissance was completed from the base metal deposits, in the Contwoyto Lake area, to Bathurst Inlet. A joint contract was awarded to Canalog Logistics Ltd./Canadian Pacific Consulting Services Ltd. to examine the requirements and costs for four selected transportation alternatives.

Assistance was obtained to finance the 1980-81 resupply of Fort Franklin by the Northern Transportation Company Limited and an interdepartmental working group was activated to examine the long-term alternatives for the community's resupply. The departmental position on continuance of the White Pass and Yukon Railway, in view of recommendations resulting from the Canadian Transport Commission inquiry into Yukon transportation, is being developed. As a participant in the interdepartmental Yukon Railway Working Group, the division contributed to the development of a long-term railway strategy.

An assessment of the impact of the proposed Arctic Shipping Policy on arctic non-renewable resource development was made. This included consultations with industry.

Non-Renewable Resources

Agreement was reached between government and Cominco Ltd. regarding the Polaris Project. The mine is to come into production in 1982. As of March 31, 1980, five major contracts had been awarded to Canadian firms.

Monitoring of the agreement between the government and Nanisivik Mines Ltd. continued. The Baffin Region Inuit Association (BRIA) completed the socio-economic impact study of the project and the final draft report has been received.

The B.C. government invited representatives of the federal government and industry to analyze the feasibility of constructing a lead-zinc smelter in that province. Active participation in this work was undertaken to ensure that full consideration is given to a Yukon location as a large part of the concentrates may come from the territory.

A review of the various mining cash flow models available within industry and government was completed and their suitability to departmental needs was assessed. Specifications for a new mining cash flow model (CASHIM) were prepared and development contracted out. The model will be in operation by May, 1980.

Special efforts were made to improve communication with companies planning to develop mineral deposits in the North. Their problems and requirements were discussed, future regional needs assessed and scenarios for mineral development in both territories were forecast.

Background information was provided to the departmental team involved in the negotiation of native land claims settlements.

Renewable Resources

A harvesting study of the Baffin Region was initiated. The study, being conducted by BRIA, will record harvest totals by species for each Baffin Region community, according to designated time periods and geographic areas. A paper on the economic and policy considerations relating to the development of northern forest resources was prepared.

The division continued implementation of Cabinet decisions concerning energy and electric power subsidies and the Northern Canada Power Commission (NCPCC).

Analyses identified home heating fuel and electricity for commercial establishments as key items for further support. As a result, the government announced a program to subsidize home heating fuel to consumers outside Yellowknife and Whitehorse and to small non-government commercial enterprises.

The division carried out a major study of the privatization of the Northern Canada Power Commission. Methods of implementing privatization and its effect on power costs under various assumptions were presented to Cabinet. The government subsequently announced that NCPCC would be retained.

The division studied new hydro facilities in the Yukon Territory. Key elements of a Northern Energy Policy were identified during the year and discussions were carried out with the territorial governments. Potential locations for renewable energy demonstration projects were examined and proposals were reviewed by other federal agencies. The division became the official liaison point with the GNWT on matters of critical fuel supply to the North.

Plans for 1980-81

Completion of Phase II of the Northeast Mackenzie District Transportation Study will entail examination of the feasibility of base metal mining in the Contwoyto Lake region. Resolution of the financial difficulties of the White Pass and Yukon Railway and completion of the Yukon long-term railway development strategy paper will occur.

The division will participate in developing suitable arctic shipping, icebreaking and user charge policies for northern developers and shippers. A branch working group will examine the concept of a common use resource road into the Sixty Mile River area close to Dawson. Work will be continued on development of infrastructure policies and a roads policy for the North.

The mineral forecasting report will be updated and policy options presented to senior management. A special effort to evaluate the benefits and costs of coal development in the Yukon will be made.

Monitoring of the Nanisivik Mines Project and reporting on the progress of Arvik Mine will continue. An evaluation of Anvil's lead-zinc smelter feasibility study will be carried out.

The findings of the Nanisivik Socio-Economic Impact Study will be reviewed and assessed. Work will continue on the BRIA-conducted harvesting study of the Baffin Region. Priorities are to be established for energy policy on a regional basis in the North. Renewable energy and conservation of energy studies will be undertaken in conjunction with the territorial governments. Studies of site-specific hydro and coal projects for power generation will be commenced. The division intends to review planning studies and cost analysis of electrification of the proposed Yukon portion of the Alaska Gas Pipeline.

Northern Pipelines Branch

Responsibilities

The branch, established to meet the demands on the Northern Affairs Program of accelerated activity in hydrocarbon transportation in the territories, is the focal point for the planning, public review, assessment and post permit responsibilities for all hydrocarbon transportation applications north of 60°. The branch coordinates departmental liaison between the department and the Northern Pipeline Agency established as the government agency responsible for the Alaska Highway gas pipeline. The branch is the base for the interdepartmental Environmental-Social Program on research related to the impacts of northern gas and oil development. It has three divisions: Planning, Assessment and Public Review.

Review 1979-80

Five hydrocarbon transportation proposals were examined during the year. Two of the projects are designed to bring gas from the Arctic Islands to southern Canadian markets. They are the Polar Gas pipeline project and the Arctic Pilot LNG (liquefied natural gas) project. The third proposal is to transport Mackenzie Delta gas by the Dempster Lateral pipeline to connect with the Alaska Highway gas pipeline. Two applications were submitted to transport oil by pipeline. They cover the Foothills Oil pipeline application, suspended pending decisions by the U.S. Government, which would transport Alaskan oil to American markets by a route paralleling the Alaska Highway gas pipeline, and a pipeline to carry oil from Norman Wells to an Alberta distribution point.

Planning for the public review of the environmental and socio-economic aspects of the Arctic Pilot Project and the Norman Wells Development Plan was carried out in cooperation with the Federal Environmental Assessment and Review Office.

The branch provided liaison between the Northern Pipeline Agency and the department's ongoing responsibilities in the Yukon in relation to the Alaska Highway gas pipeline. The department was involved in the agency's planning of socio-economic, environmental, land and associated regulatory matters.

The Environmental-Social program completed its current publishing program.

Plans for 1980-81

Socio-economic and environmental assessment of applications and public review of the Arctic Pilot Project and the Norman Wells Project will be conducted. A proposal for an alternate "Y-line" routing is anticipated from Polar Gas and further proposals to bring hydrocarbons from the western arctic and the Arctic Islands are anticipated.

Working relationships will be maintained within the Northern Pipeline Agency in the regulation of the Alaska Highway gas pipeline in Canada.

Indian and Inuit Affairs Program

Responsibilities

The Indian and Inuit Affairs Program assists Indians and Inuit in the Northwest Territories and Yukon Territory to achieve their cultural, economic and social goals. The program works in cooperation with native groups, associations and the territorial governments.

Review 1979-80

A total of \$80 000 was allocated in the Yukon Territory and \$56 100 in the Northwest Territories during 1979-80 to support high priority activities assigned to band self-government.

In the Yukon Region, the Band Training Program provided facilities to meet the training needs in band management, social assistance and cultural pursuits.

In the NWT, the emphasis was placed on the improvement of band operational performances. Special projects were also conducted to encourage stronger communication among band councils.

A total of \$20 000 was spent in the Yukon and NWT for CESO (Canadian Executive Services Overseas) services. Nine socio-economic development projects were assisted by CESO volunteers; four in the NWT and five in the Yukon.

Financial support was provided to the Council for Yukon Indians to research, develop and negotiate their Comprehensive Claim. It is expected that loans, to be repaid from the proceeds of future claims settlements, will continue in 1980-81 in line with the government's 1973 policy.

Regional Offices

Northwest Territories

Responsibilities

The Regional Office of Indian and Inuit Affairs in Yellowknife, in consultation with band councils, native associations and the NWT government, assists the registered Indian population in social, economic and band development. Specific programs included: satisfying the government's annual treaty obligations to bands and individual Indians and core funding to band councils to develop an administrative office and provide training to councils and staff in administrative and financial management.

The Economic Development Program provides advisory and financial assistance to help Indian people with their socio-economic development and liaison with the various levels and agencies involved in economic development in the North.

Review 1979-80

Both the Core Funding and Band Works Programs implemented last year continue to strengthen council administration. Eight band managers were employed by band councils and have assisted with business development and management of job creation programs. The NWT Native Women's Association was actively involved in establishing an Arts and Crafts Program.

The Economic Development Branch provided financial assistance and advisory services to 40 established native enterprises and assisted nine new businesses or significant business expansions. The community-based businesses in Fort Liard and Fort Rae enjoyed a successful year. The Band Training Program continued to focus on the training of band staff. One and two-week sessions were offered to band secretaries and managers. Seminars for band councils were conducted in Fort Liard and Inuvik.

Plans for 1980-81

Concern for socio-economic development will continue to be the main priority of the region. The Band Works Program should enable more bands to employ managers to assist in the development of business and job creation. The training program for band staff and band councils will continue.

The Economic Development Program will continue to provide advisory and financial services to native enterprises. At least two more community-based Economic Development Committees will be established. It is estimated that 10 new businesses or business expansions will receive assistance during the 1980-81 fiscal year.

Yukon Territory

Responsibilities

The Yukon Region of the Indian and Inuit Affairs Program maintains administrative functions to approximately 3 200 status Indian residents of the Yukon Territory and the communities of Atlin, Good Hope Lake and Lower Post, in northern British Columbia. The program helps Yukon Indian people achieve their cultural, social and economic goals and aspirations and ensures that Canada's constitutional and statutory obligations and responsibilities are fulfilled.

Social Development Program

Review 1979-80

The number of bands administering the Social Assistance Program on behalf of the department increased from nine to ten during the year. There are still three bands not administering the program.

Social Assistance levels have risen substantially at the regional office level, a reflection of high unemployment in the generally depressed economic situation.

During 1979-80 training was a high priority of the Social Development Program. The social services training course was completed in March, 1980. Graduates of the course will be working as band social service workers, alcohol counsellors and counsellors at the Transition Home for Women.

Plans for 1980-81

Discussion and planning regarding appropriate services for the elderly and the development of a child welfare pilot project are under way.

The department has representation on the National Native Alcohol Abuse Program Regional Advisory Board. Advisory Board representatives have recommended that more consideration be given to funding community-based program plans for 1980-81.

During 1979-80 the region hired a regional social worker to assist the director of Social Development. The program hopes to hire this social worker again in 1980-81.

The program will devote its energies to facilitating negotiations between the Yukon Native Brotherhood and the Yukon Territorial Government toward reassessment of the Child Welfare Agreement and the development of a community child welfare pilot project.

Local Government Program

Review 1979-80

During the year 15 Indian communities in the Yukon Territory and northern British Columbia received funding to administer community services transferred to band councils. Community services include programs such as core funding, overhead costs, water and sanitation, road maintenance, fire protection and recreation.

Plans for 1980-81

The control and management of the community services programs will continue to be administered by band councils. A major activity will be the transfer of local government positions from the Yukon Regional Office to four communities within the territory. Decentralization of this service was requested by the executive council of Yukon Indian Chiefs. It is expected that this service will then support both training required at the community level and the socio-economic, political and planning development of band councils.

Reserves and Trusts

Review 1979-80

The Government of the Yukon Territory, the Council for Yukon Indians, the Indian Program and the Northern Affairs Program formed a committee to review and resolve problems and concerns regarding land.

Plans for 1980-81

A total of 123 land concerns have been identified by the Council for Yukon Indians. The objective in the coming year will be to identify, document and resolve land-associated problems.

Education Branch

Review 1979-80

The Indian and Inuit Affairs Branch is involved indirectly in providing services to Yukon elementary and secondary school students. It is, however, directly involved in post-secondary, adult and band training education programs.

Twenty-six students were sent to colleges and technical training institutes this year. Seven students attended university programs in British Columbia, Alberta and Ontario. Three university graduates completed courses in education and anthropology. One hundred elementary and secondary students were placed in Yukon Hall and attended classes in Whitehorse. Twenty-four students were placed in band-operated homes and attended school while their parents pursued trapping and other traditional activities.

The 12-week welfare administrator course graduated 18 candidates to return to work for their bands. Short-term courses were held in band management.

Plans for 1980-81

Plans include improvement of the quality of education, development of community education committees to ensure continued student interest in school, and the development of a band management training program at the community level.

Economic Development Program

Review 1979-80

The Economic Development Program assists Indian people in development or expansion of economically-independent businesses and creation of employment opportunities. There are programs for contributions, grants, loans, and business advisory services.

In the past fiscal year loans totalling \$112 000 were made to Indian businessmen. One loan was to a heavy equipment contractor while individual commercial fishing operations received financial assistance.

Grants totalling \$321 000 were disbursed to both existing and new businesses. Particular emphasis was placed on the establishment of community-owned and operated stores either in areas where no such service existed, or in areas where competition with existing stores was beneficial to the community.

Also supported with financial assistance from the Economic Development Program were industries such as trapping, fishing, mining and logging.

Plans for 1980-81

Plans are being made to obtain funds for three bands to conduct community development schemes.

It is anticipated that 10 new businesses will be funded this year and that 11 existing Indian business enterprises will receive financial support.

At present, an Indian person is being trained for the position of economic development program officer and plans are under way to train another candidate early in the fiscal year. ■

Department of Industry, Trade and Commerce

ITC

Two major activity areas of Industry, Trade and Commerce affect the North. They are the Resource Industries Branch and the Canadian Government Office of Tourism.

Resource Industries

Responsibilities

Through the work of the Resource Industries Branch, the Department of Industry, Trade and Commerce plays a role in the industrial development of the natural resources of Canada's northern territories. Through the Programs Branch, the department administers programs designed to help industry in the North to develop new products, new markets and take advantage of export opportunities.

Review 1979-80

A major Resource Industries Branch project was a six-week training program at the Cominco Ltd. Con gold mine in Yellowknife for Chinese mining engineers and metallurgists. At the end of the course, the Chinese expressed interest in importing Canadian equipment and services associated with mining development.

In 1979-80 \$878 150 was spent by the Programs Branch in a variety of programs and activities in the North.

Plans for 1980-81

Close analysis and detailed discussions will be carried out by the department and other departments on a soon-to-be-released feasibility study for a proposed world-scale zinc refinery to be built by the Cyprus Anvil Mining Corp. Ltd. in the Yukon. If conditions appear favourable, the proposal will be put into operation and, when complete, the refinery will provide continuing employment for about 400.

Canadian Government Office of Tourism

Review 1979-80

Following consultation with the tourism departments of Yukon and Northwest Territories' governments, the Canadian Government Office of Tourism (CGOT), Department of Industry, Trade and Commerce, acquired \$86 597 from the Canada Employment and Immigration Commission under the 1979-80 Youth Job Corps Program (YJCP) for the creation of two projects covering 19 jobs or 546 work weeks of employment.

The project in the Yukon assisted the Yukon Historical and Museum Association to update and enhance current archival records. It also helped to prepare a documentary record on what is happening in Yukon communities. This record will serve historical purposes and be a bench mark against which future northern development can be evaluated.

The project in the Northwest Territories involved the exploration of hiking trails, upgrading of existing path bridges and preparation and placing of signs on existing trails in and around the Yellowknife area.

Plans for 1980-81

The CGOT, under the 1980 Summer Youth Employment Program will ask the Canada Employment and Immigration Commission for \$66 042 to cover four projects requiring 31 jobs or 408 work weeks in the Yukon Territory and the Northwest Territories.

The project in the Yukon will assist the Yukon Historical and Museum Association prepare a photographic record of Yukon life styles and update the Yukon Archives Visual Finding Aid. The project will also help prepare sound recordings on Yukon life styles to complement the photographic record.

Projects in the Northwest Territories will include campground improvement and enhancement; trail upgrading and signage; forest stud improvement and underbrush clearing at Fort Simpson; and information dissemination by contact with the travelling public at Fort Smith and Hay River. ■

Responsibilities

The Minister of Justice appoints judges to the Territorial Supreme Courts while the department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the Criminal Code, other federal statutes and territorial ordinances. The department also shares the costs of legal aid, native courtworker program and compensation to victims of violent crimes in the territories.

Review 1979-80

Federal payments totalling \$375 481 were made to the Northwest Territories, including \$166 028 for legal aid, \$14 379 for compensation to victims of violent crimes, \$142 000 for native courtworker services and \$53 074 towards the cost of an experimental community legal services clinic in Frobisher Bay.

The Territorial Government, in consultation with the department, developed an Ordinance which amalgamates the delivery of legal services in the Northwest Territories under the aegis of a single board of directors. It is expected that the delivery of courtworker services in the Northwest Territories will ultimately come under the jurisdiction of the Legal Services Board.

Payments totalling \$100 142 were made to the Yukon Territory. This included \$47 831 as the federal share of legal aid, \$13 110 for compensation to victims of violent crimes and \$39 201 toward the native courtworker program. A new long term federal-territorial agreement was signed for the delivery of native courtworker services in the Yukon. Additionally, a Native Courtworker Society was established to operate the native courtworker program. A new legal aid agreement with Yukon is in the process of negotiation.

Plans for 1980-81

The new Legal Services Ordinance and Regulations are now in place, implementing the recommendations of the 1977 Review Committee Report on the Delivery of Legal Services in the Northwest Territories. It is expected that the operations of Malliiganik Tukisiiniakvik will be integrated into the Legal Aid Plan during the year.

In Yukon, it is expected that new cost sharing arrangements for legal aid, similar to those in effect in the NWT, will be concluded during the year. ■

Responsibilities

Labour Canada administers the Canada Labour Code and has federal responsibility for Industrial Standards (conditions of work, minimum wages, hours of work); Health and Safety of Employees, Industrial Relations (collective bargaining, labour-management relations). The federal jurisdiction includes works or businesses of an interprovincial, national or international nature.

The department maintains offices in major centres across Canada. These offices have primary responsibility for implementation of departmental programs.

The department works in partnership with all parties in labour affairs, helping to pinpoint and analyse issues and problems, search for equitable solutions and new techniques, and be an impartial catalyst.

Mediation and Conciliation Services

The Mediation and Conciliation Branch, with conciliation officers, conciliation commissioners, conciliation boards, mediators and industrial relations consultants, provides third-party services in the federal jurisdiction (including territorial jurisdiction) to industrial disputes.

This covers collective bargaining breakdowns and other problems with labour-management relationships.

Review 1979-80

Fourteen collective bargaining disputes affecting territorial employees were handled to finality at the conciliation officer stage or post-conciliation officer negotiations. One dispute was settled with mediation assistance. These disputes involved companies engaged in airline, drilling, mining, railway, shipping and trucking operations, construction and municipal services.

Arbitration Services

The branch plays a role in disputes arising over the interpretation, application or alleged violation of provisions of collective agreements. When the Minister is asked to intervene in a dispute, Arbitration Services studies the requests, determines their validity in the light of the relevant provisions of the Code, and gathers all necessary additional information in order to recommend appropriate action.

During fiscal year 1979-80, five requests were received from the North for Ministerial appointments of arbitrators and arbitration board chairmen. One arbitrator was appointed and the remainder of the grievance disputes were settled with the assistance of Arbitration Services.

Mountain Region

A Labour Canada Office has been located at Whitehorse since August 2, 1978, to serve both the Yukon and Northwest Territories. The office activities are supplemented by staff from both the Vancouver and Edmonton Offices as required.

The Whitehorse Office of Labour Canada, Mountain Region, deals with the administration of Part III and Part IV of the Canada Labour Code; Treasury Board Occupational Safety Policies standards; guidelines in the Federal Public Service; Fair Wages and Hours of Labour Act.

During the fiscal year 16 complaint inspections relating to fair wages and hours were done by the labour affairs officer from Whitehorse. This included 11 made in the Northwest Territories and five in the Yukon. Wage adjustments were collected from two contractors. Violations were corrected and \$96 recovered for one employee in the Yukon Territory and \$8 408 was recovered for five employees in the Northwest Territories. Additional inspections involving northern contracts were conducted at contractors' head offices in Vancouver, Edmonton and Calgary.

Annual construction wage surveys were conducted in the Northwest and Yukon Territories to establish prevailing rates for inclusion in Labour Conditions Schedules for federal government contracts. These prevailing wage rates are made available to the Yukon Territory Labour Standards Branch and Contracts Tendering Department.

Provisions of Part III of the Canada Labour Code do not apply to a work, undertaking or business of a local or private nature in the Yukon or Northwest Territories. Provisions do apply to those businesses or undertakings that normally come under federal jurisdiction.

During 1979-80, 45 complaints were investigated under Labour Standards, of which 25 were in the Yukon and 20 in the Northwest Territories. As a result of these investigations, \$2 191 was recovered for six employees in the Yukon and \$3 651 for 13 employees in the Northwest Territories.

In addition, a number of complaints from persons employed by companies in the territories were resolved by investigations conducted at the company head offices in Vancouver, Edmonton and Calgary.

In the same period there were two routine inspections carried out in the Yukon Territory and 29 in the Northwest Territories. These investigations resulted in \$10 660 being recovered for seven employees.

The long-term objective in the territories is implementation of a comprehensive employment safety program covering employees subject to Part IV of the Canada Labour Code. This also covers PSC employees covered by Treasury Board Occupational Health and Safety. Under Part IV, the department is responsible for ensuring that employers maintain safe and healthy working environments in federal works, undertakings and businesses. The department assists Treasury Board with development and improvement of safety programs. It also monitors existing programs in accordance with the Occupational Health and Safety policies of Treasury Board.

Review 1979-1980

During the 1979-80 fiscal year, 33 safety visits involving inspections, surveys, safety audit program development and accident investigations, were undertaken in the Northwest Territories. Covered were: banks, highway transport, telephone industry (Northwestel and Bell), Northern Canada Power Commission and RCMP.

In February, 1980, the technical advisor for Labour Standards and the Whitehorse labour affairs officer conducted a one-day advisory session with the labour standards officials of the Yukon government.

In March, 1980, the technical advisor for Occupational Safety and Health addressed a four-day safety seminar in Whitehorse for employees and managers of Northern Affairs. The Whitehorse labour affairs officer addressed the same seminar on the topic of the Government Employees Compensation Act.

The labour affairs officer made ten visits involving inspections, surveys, safety audit program developments and accident investigations. Industries, crown corporations or government departments covered included: aircraft industry, highway transport, Transport Canada, Northern Canada Power Commission, Environment Canada, railway industry, Public Works Canada, Indian Affairs and Northern Development, CN Telecommunications, Revenue Canada, Customs and Excise.

New agreements with the Yukon and Northwest Territories were concluded during 1979, providing technical inspections in connection with boiler, pressure vessel and elevating devices in federal buildings.

Accident compensation claims processed in the Northwest Territories to the end of March, 1980, totalled 734 and in the Yukon, 357.

In July, 1979, the labour affairs officer established an Interdepartmental Safety Commission in Whitehorse. Participants from all federal departments, meeting every four to five weeks, sought to establish safety programs within the public service.

In October, 1979, the labour affairs officer conducted a two-day seminar in Whitehorse for employees and managers of the Northern Canada Power Commission. The meeting was held to help organize labour-management safety committees in both territories.

Plans for 1980-81

The office in the territories will continue to promote and establish safety committees in both the private and public sectors.

During the year assistance will be available from the department with identification and training of sports and recreation leaders from within the native community. Responsibility for the federal Fitness and Amateur Sport Program moved to Labour Canada in March, 1980.

Library and Legislative Analysis

The Legislative Analysis Division collects and analyses Canadian legislation affecting employers, employees and the work place. Legislative developments in occupational safety and health, compensation and employment standards in Yukon and the Northwest Territories are covered by the division. An annual report, prepared for the Canadian Association of Administrators of Labour Legislation, brings together representatives of the federal and provincial departments of labour and representatives from both territories.

Labour Data Branch

The Labour Data Branch carries out an annual survey of wages, salaries and conditions of work in establishments with 20 or more employees. The October 1, 1979, survey included 41 establishments in Yukon and 53 in the Northwest Territories. The survey will be carried out again in 1980.

Information on strikes and lockouts in the two territories is maintained on a continuing basis. In 1979, two work stoppages were reported involving 540 workers and time loss of 10 230 person-days.

The branch maintains a file of collective agreements, including 42 covering some 7 026 employees in the territories.

The 1978 report on labour organizations and union membership showed 74 union locals with membership of more than 6 661 in the Northwest Territories and Yukon. ■

Responsibilities

National defence responsibilities in the North safeguard sovereignty and independence by surveillance of airspace and sea approaches.

In the North National Defence protects Canada against threats and challenges to its territorial integrity (including the integrity of Canadian territorial sea and airspace) and contributes to the collective security arrangements. Additionally, the department supplements and supports civil departments and agencies of government to discharge their responsibilities and reinforce Canada's jurisdiction under national and international law.

Review 1979-80

Canadian Forces recruiting teams from Vancouver, Edmonton, Winnipeg and Montreal conducted employment and career briefings in 31 communities in the Yukon and Northwest Territories to ensure that northern residents are aware of training and employment opportunities in the Canadian Forces. Visits were carried out to Watson Lake, Whitehorse, Carmacks, Faro, Mayo, Elsa, Ross River, Teslin, Carcross, Haines Junction, Dawson, Fort Smith, Hay River, Yellowknife, Holman, Coppermine, Cambridge Bay, Fort Simpson, Inuvik, Eskimo Point, Rankin Inlet, Baker Lake, Frobisher Bay, Hall Beach, Igloolik, Pangnirtung, Resolute Bay, Repulse Bay, and Pelly Bay. Twenty-four applications from native people were received for enrolment in the Canadian Forces. Thirteen of these were enrolled but six have since been released.

Tours of military training facilities at Canadian Forces Bases Chilliwack and Esquimalt were jointly sponsored by the Department of National Defence and the Department of Indian Affairs and Northern Development for 14 northerners engaged in employment or training activities in the Northwest Territories.

The Canadian Forces School of Aerospace and Ordnance Engineering at Canadian Forces Base Borden, Ontario, conducted an annual seven-month aircraft mechanics course for native northerners. The graduates were subsequently employed by aircraft companies operating in the North.

Maritime Forces

A northern deployment by the replenishment ship HMCS Preserver took place between July 31 and October 1 in support of Department of National Defence and Department of Fisheries and Oceans projects in the high arctic. During deployment the vessel operated in Frobisher Bay, Resolute Bay, Barrow Strait, Lancaster Sound and Jones Sound.

Argus aircraft flew approximately 600 hours on Northern Patrols (NORPATS) in the arctic. NORPATS were scheduled for Argus to operate out of Frobisher Bay, Yellowknife, Cold Lake and Edmonton. During the ice season most Argus on NORPATS carried Transport Canada ice observers and conducted ice reconnaissance. NORPATS also included photographic tasks on behalf of the Department of Indian Affairs and Northern Development, Environment Canada and the Department of Energy, Mines and Resources for use in off-shore oil exploration and drilling activity on the archipelago and reporting on population movements. DND carried scientists and observers from other government departments conducting investigation of seabird and marine populations in the Beaufort Sea and ice research along arctic shores.

Land Forces

Mobile Command elements were involved in three exercise Northern Viking patrols during 1979-80. These 25-men patrols allow junior leaders the maximum amount of initiative while living and moving in the North. Ten survival cairns were installed in the various patrol areas and assistance was given to local community projects. Deployment to and support in each exercise area was provided by various types of CF aircraft. This concluded the Northern Viking series of patrols which placed 140 cairns around 33 northern communities.

Two Mobile Command formations conducted a company-sized winter exercise north of 60° latitude. Companies were airlifted to Resolute Bay and Coral Harbour.

A new series of exercises nicknamed Sovereign Viking will replace both the Northern Viking series and the company-sized exercises. Two trial series were conducted in 1979-80 involving long range company-sized mechanized patrols in the area of Coral Harbour, Southampton Island.

One formation conducted a reconnaissance exercise for senior officers. It covered large portions of the North and involved meetings and briefings at various communities. Long-range communications exercises were also conducted with radio detachments being deployed throughout the North.

Air Forces

During the annual Box Top airlift, Hercules aircraft transported 688 565 kg of general stores from Thule, Greenland, to CFS, Alert, as well as 3 584 884 L of diesel fuel and 93 661 L of jet fuel. A "mini" Box Top was flown using Boeing 707 aircraft to airlift 224 986 kg of construction material to Thule for onward lift by Hercules to Alert. Use of the Boeing was more cost effective than positioning the material in Thule by Hercules as in the past.

Hercules aircraft continued to provide weekly service flights and additional special flights to support Canadian Forces' Communications Stations at Alert and Inuvik. During the fiscal year, 977 031 kg of construction material and general cargo were lifted to Alert and 410 658 kg to Inuvik.

The Northern Airfield Construction program was supported by Hercules and Buffalo aircraft. Buffalo aircraft expended more than 290 hours in this program.

During 1979-80, a number of land exercises were conducted throughout the arctic and were supported by Hercules and Buffalo aircraft. Air Transport Group (ATG) also flew Hercules missions to support the CF Mapping and Charting Establishment.

Two Twin Otter aircraft at 440 Squadron Detachment, Yellowknife, were used for communications flights and search and rescue missions.

In 1979-80 helicopters from 10 Tactical Air Group provided mapping and charting support from the north end of Baffin island, north of the 68th parallel, to the Pond Inlet and Hall Beach area. Approximately 1 050 helicopter flying hours were logged on projects and exercises which assist in national development and training DND aircrews to operate in the high arctic under summer and winter conditions.

The Distant Early Warning (DEW) Line, consisting of four main and 17 auxiliary sites, continued to provide a military presence in the arctic. These installations stretch from Cape Dyer, on the east coast of Baffin Island, to Komakuk Beach near the Alaskan border. While all sites are operated by civilians under United States Air Force contract, Canadian Forces members are at the main sites and the airfields at Tuktoyaktuk, Hall Beach, and Cambridge Bay are operated by Transport Canada.

Air Reserve activities in the North in 1979-80 continued at a significant level. Reserve aircraft flew support for CF Mapping and Charting Establishment field survey operations. They also provided a vital communication and re-supply capability during the initial stages of airfield construction at Spence Bay. Arctic training by reserve squadrons allowed personnel to conduct northern search and rescue operations and provide essential flying services to Northern Region Headquarters and northern communities.

Military Engineering

Airfield construction was carried out at Spence Bay in 1979. This airfield was completed and the official handover from the Department of National Defence to Transport Canada was conducted September 5, 1979. The finished airfield includes a 30 by 914 m runway with 15 m shoulders, an apron, gravel pads for a terminal building and meteorological/landing facilities, and an access road to the community. The construction took from May to September, 1979, and involved 25 military people and eight civilians. The completion of Spence Bay Airfield marked the end of the Department of National Defence involvement in the Arctic Airfields Construction Program under the 1974 Memorandum of Understanding between the Department of National Defence and Transport Canada. Future airfield construction involving DND and Transport Canada will be under the 1976 Memorandum of Understanding.

The project to rehabilitate Canadian Forces Station, Alert, (Project Trelar) continued in 1979 with the completion of an operations building, an aircraft parking apron, fuel handling facilities, various antenna anchorages and the upgrading of a road to within 1 km of the length of the existing route. Quarry and crusher operations were again conducted to supply material for the airfield and various other projects. Project Trelar 79 was carried out between May, 1979 and April, 1980. The 1979 Trelar Project employing a total of 390 tradesmen, was conducted in five phases of approximately eight weeks each. Supply of construction material to Canadian Forces Station, Alert, was by C130 Hercules aircraft.

The Mapping and Charting Establishment (MCE) surveyed 400 000 km² of Northeast Baffin Island between June 20 and August 20, 1979. Approximately 45 survey, aircrew and support personnel were deployed, including four aircraft operating from a base camp at Pond Inlet. Survey by Doppler Satellite method was used to supplement existing control for the eventual production of original 1:50 000 maps of the area.

Plans for 1980-81

Recruiting teams will give employment and career briefings to northern communities. A tour of military training facilities will be offered to northerners from the Inuvik Region of the Northwest Territories.

A special native northerners training course in aircraft mechanics will be carried out at Canadian Forces Base, Borden.

Maritime Forces

Tentative plans are being made for northern deployment of an operational support ship and a diving ship during the latter part of 1981.

Maritime sovereignty and surveillance patrols will continue in 1980-81 at a level similar to that of 1979-80. Support to other government agencies will continue whenever practicable.

Land Forces

The Sovereign Viking series of exercises will replace the Northern Viking series, company-sized exercises and long-range communication exercises.

Two reconnaissance exercises for senior officers will be conducted.

Air Forces

Hercules aircraft will provide scheduled service to Alert, Inuvik and Yellowknife. Buffalo and Hercules aircraft will be used during the spring, summer and early fall to provide support for the Northern Airfield Construction program, mapping and charting.

431 Air Demonstration Squadron, the Snowbirds, will conduct its annual tour of Canada's North in May, 1980. Performances will be given at Whitehorse and Watson Lake in the Yukon Territory, and Hay River and Yellowknife in the Northwest Territories.

Air Reserve plans for next year include training exercises, the provision of flying services to Northern Region Headquarters and support of the ongoing arctic survey, which will involve extensive use of helicopters for mapping and charting.

Military Engineering

Due to financial constraints within Transport Canada no Northern Airfield Construction involving the Department of National Defence is to be undertaken in 1980. Negotiations are under way between the Department of National Defence and Transport Canada for possible construction of an airfield in 1981, perhaps at Gjoa Haven. The project to rehabilitate CFS, Alert, will continue with construction of a lakewater pump-house, a fire alarm system and fuel distribution lines.

A major survey operation in the St. Elias mountain range in the Yukon-Alaska boundary region will take place between May 24 and July 15, 1980, to provide control for 1:50 000 mapping. This project supports the Department of Energy, Mines and Resources National Mapping Program.

Research and Development

Responsibilities

The Research and Development Branch (CRAD) formulates the scientific policy of the department and controls and manages activities in the physical sciences. CRAD ensures the availability of a technology base capable of providing the knowledge and experience necessary to solve technological problems of equipment and operations. Research is undertaken on a variety of projects aimed at acquiring knowledge, testing and evaluating equipment and systems proposed for use in Arctic areas or other low temperature environments.

Review 1979-80

The internal R&D program of the department is conducted in DND's six research establishments. During 1979-80, five of these establishments were involved, to some degree, in research related to northern activities. In addition, a number of research contracts were awarded to Canadian universities and industries.

Defence Research Establishment Pacific (DREP) directed research toward the development of effective methods for submarine detection in arctic waters.

Activity in the North in 1979 included April expeditions to Barrow Strait and McClure Strait. Both groups established camps on the sea ice, the former for geomagnetic measurements and the latter for studies of underwater acoustics. In the late summer a party of DREP scientists in HMCS Preserver proceeded to Barrow Strait but were unable to carry out their intended work because of heavy ice conditions.

The 1980 field season started with a small party in the Barrow Strait area and a larger one in Nansen Sound. The Nansen Sound camp is working in cooperation with four US laboratories which have established camps on drifting floes in the polar pack as far away as the North Pole.

Defence Research Establishment Valcartier (DREV) - in 1975 initiated an environmental test series to qualify the new CRV7 rocket weapon for use in a wide climatic environment. The arctic climate tests are being carried out at Canadian Forces Base, Alert, where test rocket motors are stored and withdrawn for shipment after various periods of arctic exposure. The test involves delivery of rockets to Canadian Forces Base, Alert, monitoring the thermal environment experienced in the storage area, and cycling the rocket motors through other climatic conditions before the return to DREV for proof testing of the rocket propulsion system. This environmental test series will extend into 1986.

DREV provides support to Environment Canada's search for suitable oil disposal methods applicable to its Arctic Marine Oilspill Program (AMOP). DREV is investigating various incendiary devices for ignition and burning off of arctic oil spills. Experiments will take place in McKinley Bay June, 1980.

Defence and Civil Institute of Environmental Medicine (DCIEM) is concerned with effective performance of military personnel. DCIEM research and development includes programs on human responses to stresses such as extreme heat, extreme cold, high altitude and acceleration, physical fitness, aerospace life support systems, infection and immunity, and deep living. Tasks include behavioural and bioscience investigations relating to sea, land and air operations.

DCIEM personnel monitored Canadian Forces Exercise Rapiere Thrust in western Canada in January, 1979, when experiments on cold acclimatization were conducted. The weather encountered by the troops on this exercise was too mild to initiate any changes in physiological reactions to the cold. The experience was valuable in that it provided various calorimetric physiological tests.

DCIEM facilities include climatic chambers used in physiological investigations at a variety of ambient temperatures. A Cold Wind Facility has been developed to determine the nature of convective cooling of military personnel. The facility was completed late in 1979 and shakedown tests with human subjects were initiated. Initial results showed a great variation in the physiological reaction to convective cooling. As a result corrections to the windchill index customarily used will have to be initiated.

In December, 1979, Defence Research Establishment Ottawa (DREO) scientists participated in Exercise Sovereign Viking to identify problems in environmental protection for mechanized infantry operating in the extremely low temperatures prevailing at Coral Harbour. Sleeping bag evaluations were also done at that time.

Bush clothing treated with the insecticide Permethrin was found to be more effective in improving working conditions than repellent-treated clothing. Insecticide treated garments were still effective after several months of storage.

In the area of electrical power supplies, studies of the use of thermoelectric generators in the North continued as power sources for long unattended operations. Work to improve low temperature performance of lead acid batteries continued and a program to extend the life of nickel cadmium aircraft batteries used for onboard starts in the North was initiated. The evolution of advanced primary batteries capable of operation down to -40°C continued to be focused on lithium-sulphur dioxide and lithium-thionyl-chloride cells.

During 1979 investigation on Anik communications in the high arctic were completed and the feasibility of using the satellite to communicate as far north as the airstrip at Eureka was confirmed. Some additional work is currently under way to develop a relatively low cost, unattended, and low primary power consumption communications relay system for further extension of service to remote arctic areas.

Defence Research Establishment Suffield (DRES) conducted research on problems related to protection against biological and chemical warfare. This expertise has been brought to bear on a study of viral respiratory disease patterns among the personnel stationed at Canadian Forces Base, Alert.

In the field of military engineering, DRES has an on-going contact with the Department of Civil Engineering, University of Alberta, to conduct research into northern geo-technical engineering of specific interest to DND. Work on the evaluation of engineering geophysical methods for military purposes has now been terminated but studies concerning the viability-usefulness of underground caverns in permafrost are continuing. Also continuing are studies into pile driving in permafrost using vibratory methods. It is anticipated that enough data will be available in another year to address the possibility of field demonstrations in these two areas.

Work in vehicle mobility was transferred from DREO during 1979. Considerable attention was being given to problems related to the reliable operation of vehicles in extreme cold conditions. Other work was directed towards studying and classifying snow with a view to predicting its trafficability. A number of relevant contacts are in place and continuing. Particular work on vehicle-terrain classification is being done at McGill and Carleton Universities and work on mapping and terrain classification at McGill University, University of British Columbia, and by Collins and Moon Consultants Ltd.

Plans for 1980-81

The research program carried out by Research and Development will continue. However, emphasis does change as results of research are adopted and new problems tackled.

Research Contracts 1979-80

Control Data Canada Ltd., Ottawa: Development and evaluation of various algorithms required for acoustic detection systems in the Canadian arctic.

Applied Microsystems Ltd., Victoria, B.C.: Development of a submersible low power digital tape recorder for remote data acquisition and storage.

University of Victoria: Electromagnetic modelling and field station studies of the coast effect in bays.

Barrowdale Computing Services Ltd., Victoria, B.C.: Solution of flow noise integrals.

Rodrol Instrumentation: Development of a Multiplex physiological monitoring system.

Department of Psychology, Dalhousie University: Development of vehicle guidance with reduced visual conditions. ■

National Energy Board

NEB

Responsibilities

Under the National Energy Board Act of 1959 and subsequent amendments, NEB has two principal roles: regulation of specific areas of the oil, gas, and electrical utility industries, and advice to government on development and use of energy resources.

The board is a regulatory body. With the approval of the Governor-in-Council, it grants certificates of public convenience and necessity for the construction or operation of interprovincial and international petroleum pipelines and international electric power lines. It also issues licenses authorizing export or import of gas and oil or the export of power. Other board functions include issuance of safety orders for pipelines, regulations of rates, tolls, and tariffs charged by the oil and gas pipeline companies under the board's jurisdiction, and approval of pipeline utility crossings.

The board may hold inquiries into particular aspects of the energy situation and prepare reports for government, Parliament, and the public. The board also carries out studies and prepares reports at the request of the Minister of Energy, Mines and Resources.

The board administers certain provisions of The Petroleum Administration Act, passed June 19, 1975, which empowers the federal government to impose a charge on the export of crude oil and certain petroleum products; provide compensation for certain petroleum costs; and regulate the price of Canadian crude oil and natural gas in interprovincial and export trade.

The Northern Pipeline Act, passed April 12, 1978, provided authority for construction of a natural gas pipeline in Canada along the Alaska Highway, and for creation of a Northern Pipeline Agency to oversee the pipeline construction.

The NEB's responsibilities for the Act relate mainly to the incentive rate of return schemes, financing and tariffs. In addition, the Northern Pipeline Agency seeks assistance from the board on engineering design and on environmental and socio-economic matters.

Review 1979-80

Public Hearings

During 1979 the Board conducted 13 public hearings. Following are highlights of these hearings:

In February the board released its report on Natural Gas Supply and Requirements. The main conclusions were:

- that surplus should be determined using three tests.
- that surplus gas exists (approximately 2 Tcf), which could be exported over a period of some eight years.
- that established reserves in the conventional producing areas of Canada were 66.1 Tcf at the end of 1978, some 4.7 Tcf more than the board estimated for year-end 1976 in its Northern Pipelines Report in June, 1977.
- that supply in the frontier areas was found to be
 - a) 5.3 Tcf of established reserves in the Mackenzie Delta-Beaufort Sea area and
 - b) 9.2 Tcf of established reserves in the arctic islands.
- that growth in demand for natural gas in existing markets would average three per cent per year between 1978 and 2000.
- that growth in demand in the expansion markets of Quebec and the Maritimes might, under certain conditions, be approximately 180 Bcf in 1990, rising to 255 Bcf in 2000.

Foothills Pipe Lines (Yukon) Ltd. appeared before the board in June for Phase I of a four-part hearing concerning the tolls and tariffs to be charged on Canadian sections of the Alaska Highway Natural Gas Pipeline.

The board issued a report on each phase of the hearing. The report concerning the first phase, which dealt with tariffs and financing of the pipeline, was released July 30, 1979.

Phase II of the hearing, relating to proposed "prebuilt" portions of the pipeline, was held in August and the report issued on October 4.

Phase III began October 23, 1979, and the report was issued December 20, 1979. The report included a review of certain parts of the Phase I decision on the main line tariff, specified the rate of return under the Incentive Rate of Return Scheme, and clarified minor tariff items pertaining to the Phase I decision and the Phase II decision on the "prebuilt" tariff. In addition, the board's decision modified its January, 1979, proposal for the Incentive Rate of Return scheme by eliminating the effect of inflation outside Foothills (Yukon)'s control.

Following the February issue of the Natural Gas Supply and Requirements Report, which identified a potential exportable surplus, ten export applications were received and a hearing, known as the Omnibus Gas Hearing, was held during the summer.

Based on the hearing, the board updated its estimate of remaining established reserves in the conventional producing areas of Canada from 69.7 EJ at the end of 1978 to 75.7 EJ at the end of 1979. The estimate of established reserves in frontier areas was not changed.

As a result of a review of the board's previously published forecast of Canadian requirements, the February forecast was revised downward. However, for the purposes of determining surplus, the board used the earlier forecast which would afford a greater degree of protection for future Canadian requirements.

On the basis of the revised reserves and requirements forecasts, the board authorized new exports of natural gas amounting to 106 239 x 10⁶m³ to the following ten companies.

	10 ⁶ m ³
Alberta & Southern Gas Co. Ltd.	2 520
Canadian-Montana Pipe Line Company	2 083
Columbia Gas Development of Canada Ltd.	2 394
Niagara Gas Transmission Limited	718
ProGas Limited	17 050
Sulpetro Limited	1 838
Westcoast Transmission Company Limited	6 356
Pan-Alberta Gas Ltd.	51 010
TransCanada PipeLines Limited	10 896
Consolidated Natural Gas Limited	11 374

106 239

On April 4, 1978, TransCanada PipeLines Limited filed an application with the board for a certificate to construct and operate a pipeline to Quebec, New Brunswick and Nova Scotia. This application was amended March 30, 1979. On October 20, 1978, Q and M Pipe Lines Ltd. also applied to the board for a certificate to construct and operate a pipeline extending from Montreal to Halifax. This application was subsequently revised by Q and M December 9, 1978, and April 26, 1979.

On November 5, 1979, both applicants amended their separate applications by proposing a joint venture. TransCanada proposed to extend its gas pipeline facilities in Quebec to Lévis/Lauzon, while Q and M proposed to construct gas pipeline facilities from Lévis/Lauzon to Halifax. TransCanada and Q and M jointly proposed the construction and operation of 1 200 km of mainline, 2 300 km of lateral lines, 11 compressor stations, and an underground storage facility at Sussex, New Brunswick. Hearings commenced September 25, 1979, in Ottawa and further hearings are scheduled in 1980 in Quebec City, Halifax, Fredericton, and Ottawa.

In April, 1979, Trans Mountain Pipe Line Company Ltd. and Foothills Oil Pipe Line applied for certificates under Section 44 of the National Energy Board Act authorizing the construction and operation of pipelines to transport Alaskan and offshore crude oils from the west coast to Edmonton, Alberta, for trans-shipment to the northern part of the United States.

The Trans Mountain proposal consists of 1 089 km of 762-mm pipeline from the international border near Sumas, Washington, to Edmonton, Alberta. The pipeline would be located on the existing Trans Mountain right-of-way and would utilize two existing loops totalling approximately 160 km of 762-mm pipe.

The hearing of the Trans Mountain application was completed November 13, 1979. As of year-end a decision was pending.

The Foothills proposal originally consisted of 111 km of 914-mm pipeline and 1 009 km of 864-mm pipeline from White Pass, Yukon, to Keg River, Alberta. Prior to the commencement of the combined hearing, Foothills revised its application to 2 118 km of 864-mm pipeline extending from the international boundary between Yukon and Alaska, to Edmonton, Alberta.

During the hearing, Foothills requested that consideration of its application be postponed. ■

NFB

Responsibilities

The National Film Board produces motion pictures, film loops, film strips, slide sets and still photo exhibits about the Canadian North, its peoples and their activities, its industries, resources, and institutions. NFB distributes these materials in Canada and abroad.

Review 1979-80

During 1979-80, the Film Board maintained its relationship with the Nunatsiakmiut Society of Frobisher Bay, providing administrative, financial and technical services. Included was the transfer of super 8 film material to video for editing by Nunatsiakmiut in Frobisher Bay before telecast by CBC Northern Service.

During the year the NFB continued a training program for PIC-TV personnel in Pond Inlet, a project which started local telecasts in October, 1978.

The NFB has also provided technical assistance to Cree communities in the James Bay region, where plans are under way for a communications network encompassing the scattered settlements in the area.

The Challenge for Change regional program wound up its activities in 1979. The program maintained an active training and production program in Yellowknife, utilizing video, super 8, and slides. The program's Yellowknife representative continued special distribution projects in the Mackenzie Delta region and helped local groups set up or expand film libraries and production facilities.

The NFB continued to participate in an ad hoc Interdepartmental Committee on Northern Native Television Programming.

During 1979-80, French production initiated a feature-length documentary, INUIT/POVO.

The NFB has attempted to improve its distribution program in the North. The number of films available has been increased and the delivery system has been expanded. Consultations with northern audiences was geared to impacting on the quality of films available.

A new system of distribution for Nouveau Québec, involving centres that would coordinate bookings and forward prints from point to point in the North, was given an unsuccessful trial. A survey taken on the new system in the Cree and Kativik School Boards favoured a return to the original system of Montreal office handling bookings directly. Approximately 700 bookings over the year accounted for some 3500 screenings.

There were 100 CBC titles added along with 25 NFB titles to the Outpost Library inventory which now stands at 1200. A new edition of the catalogue is being prepared.

The Ottawa Outpost Film Library, which serves the Baffin District, has approximately 250 prints. Requests from the North are serviced from the regular Preview Library, but the time required for a film to go out and back favours maintenance of outpost libraries. Overall approximately 1 000 bookings were made last year out of Ottawa.

A contract was signed with Inuit Tapirisat of Canada to provide several titles of films in the 3/4 inch videocassette format for distribution throughout the eastern arctic. The expansion of the use of this format will be studied and an NFB representative will explore the possibilities of instituting such an approach.

NFB's Ottawa office arranged for representatives of the CBC Northern Television Service to preview a selection of NFB films. As a result, CBC acquired 26 half-hour programs for broadcasts starting in October, 1979, and ending in March, 1980. Some of the titles were travel films telecast as part of the Saturday Travel Series on Channel B - 1400E. Other films included the Inuk versions of *The Flight of the Snows*, *The Sami - Part 1 and Part 2*, and such titles as *People of the Seal - Part 1 and Part 2*, *The Whales are Waiting*, and *The Beauty of My People*.

The Edmonton office, which services the Mackenzie District, makes its entire collection of 2 300 films available. A moderate increase of bookings occurred to the North as an average of 75 bookings per month were recorded.

The French Canadian Cultural Association of Yellowknife uses the Edmonton office's library of French language films. Approximately 100 bookings were made last year to this group. The Department of Education's Library purchased its first block of French language films. A total of 21 titles made up its first selection.

A selection of 40 titles, recommended by former Challenge for Change distribution personnel, was deposited with the Native Communications Society which distributes the films directly to native Indian groups in the Northwest Territories.

The Department of Education's Resource Centres decentralized further this year, establishing centres in Fort Smith and Inuvik. As a result, NFB films which had been in the Yellowknife centre will now be more accessible.

The Department of Education's Library is considering extending its services to NWT social agencies which could benefit from films in the areas of citizenship, health and employment.

The B.C. office, which serves northern B.C., made 2 700 prints available by virtue of its own office in Prince George and film libraries at Dawson Creek and Prince Rupert. This action generated 17 000 bookings last year. The Yukon Government A/V Library now has 1 200 prints in its inventory. There were 12 000 bookings last year, an increase from 1978's booking figure of 3 000. The Vancouver office continued to provide a back-up service that accounted for 200 bookings. A selection of titles will be transferred to videocassette, pending a contract to be signed with the Yukon.

The Vancouver office prepared a special kit of information material on native films. There has been a heavy demand for such information from Band offices and Indian schools.

Plans for 1980-81

Plans are under way to establish a Northern Support Project, including the hiring of a full-time coordinator, to consolidate existing northern operations and promote the production and distribution of native and native-language productions. The possibility of distributing some NFB films in the 3/4 inch videocassette format will be examined. A versioning program of selected titles in Cree and Inuktitut will be given consideration. The *Tuktu* series is a likely prospect for versioning into Inuktitut.

The Baldwin Cartier School Board, which has entered into an agreement with the Kativik School Board to provide audiovisual services, is sharing information with the NFB on the kinds of films required. There is a possibility of sharing resources to make Inuktitut versions available. NFB interests include school programs and the community at large.

Future considerations include a special A/V library for Indian Schools and training centres and the possibility of providing "Sounds from our People" series on tape.

Two DIAND - sponsored films, *The Canadian Reindeer Industry* and *The Eskimo-Dog-Kingmuk* produced by Inuk Films, Yellowknife, will be completed this year.

The film *INUIT/POVO* will be shot in 1980 with the collaboration of the Inuit of Povungnituk in northern Quebec. ■

National Museums of Canada

NMC

National Programs Branch

Canadian Conservation Institute

Responsibilities

The Canadian Conservation Institute (CCI), created in 1972 by the National Museums of Canada, strives to help publicly-owned museums, galleries and archives protect their collections against deterioration. CCI integrates scientific research with applied conservation techniques in its laboratories in Ottawa and operates mobile laboratories, staffed with qualified conservators, across Canada. As well, the institute provides advice on all matters from the care of artifacts to proper environmental conditions within institutions. It offers free lectures, workshops and seminars.

Review 1979-80

On site conservation assistance was provided to the Dawson City Museum where severe flooding damaged glass negative collections and an outdoor display of four steam engines and mining equipment. CCI also instructed volunteers on the proper handling of damaged artifacts.

A visit was made to the Yukon Territories Archives in Whitehorse where floods damaged archival collections.

Plans for 1980-81

Work on scientific examination and conservation of artifacts already recovered from excavations in the Yukon and Northwest Territories will continue at the headquarters laboratory.

The mobile laboratory will visit several institutions on its tour through the Northwest Territories and the Yukon to provide basic conservation treatment and advise on the care and conservation of collections.

Museum Assistance Programs

Responsibilities

The Museum Assistance Programs provide financial and technical assistance to Canadian museums and related institutions to preserve and increase public access to the objects and collections which form Canada's natural and cultural heritage.

Assistance is available towards renovation, upgrading and, in some cases, the construction of facilities. Assistance is also available for the purchase of equipment, registration of collections, training of museum personnel, preparation, production and circulation of exhibitions; and special projects.

Review 1979-80

A grant of \$10 500 was allocated towards the public programming activities of the Northern Life Museum and National Exhibition Centre. As a result, the institution provided the public of Fort Smith and its surrounding communities with a varied program of activities.

A grant of \$5 500 was approved to enable the Northern Life Museum and National Exhibition Centre to undertake an evaluation of its current operation and to plan for the future.

The Yukon Historical and Museum Association received \$6 000 to undertake a survey of the training needs of museums in Yukon. The survey will pave the way toward planning a training program for museum workers in the Yukon.

Research continued into the problems of museum architecture and the conservation of collections in northern communities.



Musk-ox, Resolute Bay, Cornwallis Island.
Photographer: K.G. Ferguson, Jr.



IX-C-4095

Fishing Lure from Nerdliviktok, collected by G. Rowleu, 1938-9.

IX-C-2846

Ivory Snow Goggles from Maxwell Bay, North Devon Island, collected by T. Harwood, 1936.

J1Gu-3-200

Ivory Bird - West Bank of Amulet Creek 1/4 mile from mouth, Mansel Island, Hudson Bay. J-21384

One Ivory Bear, District of Franklin.

Photographer: Ken Dodd

Plans for 1980-81

A grant of \$20 000 will enable the Northern Life Museum and National Exhibition Centre in Fort Smith to continue public programming activities in 1980-81.

The problems of building museums and conserving collections in the North will continue to be researched. Planning exercises on specific museum projects are to be undertaken and it is hoped a conference will be held on the problems facing northern institutions. Applications for Capital Planning Grants are anticipated from several northern institutions.

National Museum of Man

Archaeological Survey of Canada

Responsibilities

The survey undertakes research and rescues archaeology pertaining to the prehistoric occupation of Canada.

Review 1979-80

Late Dorset and early Thule culture components of a site at Brooman Point, Bathurst Island, were excavated and a large amount of well preserved material was recovered. Brief excavations were also made at early Dorset components in the area.



Ethnology Division

Photographer: LeBeau and Rundel

IV-D-34344, Copper Eskimo

One needle case consisting of bone tube.

Collector: D. Jenness, 1916

IV-D-1824, Coppermine

Snow goggles

Collector: A.W. Jolliffe

IV-D-233, Copper Eskimo

Ulu with iron blade, a Roman's meat knife.

Collector: D. Jenness, 1916

IV-D-176, Copper Eskimo

Snow knife

Collector: D. Jenness, 1916

An archaeological survey was conducted along the shores of Great Bear Lakes's McTavish Arm to extend the range of previous surveys along the lake. Seventy-five lithic (prehistoric) sites, several stone pit features, seven caribou fences, and ca 140 teepees, lean-to and windbreak placings of the historic period were observed. Surface collections were made.

The Yukon Refugium Project did not conduct field work in 1979. The summer season was devoted to a major international conference in Austria.

Plans for 1980-81

Publications in the Mercury Series, in Arctic, and in the PBS television Odyssey series will appear in 1980 as a result of work carried out in 1979. A number of archaeological field projects will be undertaken in the Yukon and Northwest Territories.

Canadian Ethnology Service

The Canadian Ethnology Service documents the cultural heritage of the native peoples of Canada, including research, collections, analysis and dissemination of information on the ethnographic, linguistic and material culture of the Indians and Inuit of the Yukon and Northwest Territories.

Review 1979-80

Staff research on Athapaskans focused on land use, material culture and Athapaskan-Inuit interrelationships and Inuit changing patterns of subsistence hunting and fishing.

Research projects contracted by the program for studies on the cultures of the Athapaskan and Inuit peoples included a linguistic study of Slave; a traditional study of the development of economic and social interactions among the Chipewyan, Cree and Métis; a kinship study to clarify the relationships among Cape Dorset graphic artists; and a study on terrestrial navigation, route finding and special orientation among the Inuit of Gjoa Haven.

Plans for 1980-81

Staff research on Athapaskan Indians will continue to focus on land use and material culture. A pilot study on the cross-tribal use of caribou fences and fish traps, initiated in 1979-80, will be implemented. Inuit staff research will continue on language, subsistence hunting and fishing and material culture activities along the west coast of Hudson Bay.

Six research projects will be contracted for studies among the Indians and Inuit of the Yukon and Northwest Territories. These are: A systematic analysis of the family and kinship network for the Dene community of Fort Liard; an ethnobotany of the Chipewyan; ethnomusicology in the Keewatin; ethnoecology in the Eskimo Point area; an analysis of traditional social relations in Arctic Bay and a study of traditional kin relationships in Clyde River.

National Museum of Natural Science

Vertebrate Zoology Division

Responsibilities

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through comprehensive faunal surveys, field research programs, and the maintenance of important collections. The division cooperates with government agencies and scientists of other countries interested in the North.

The Ornithology Section assumes the general responsibilities for research on bird distribution, systematics, and taxonomy. It undertakes short- and long-term projects, including an analysis of the Canadian bird fauna in comparison to the entire Holarctic ornithofauna.

Review 1979-80

Biological investigations on east coast of Ellesmere Island: The field studies on Ellesmere Island during June and July, 1979, were mainly on the east coast in the area of Alexandra Fiord. Field parties studied birds and mammals, June 12-July 16, and botany, July 12-July 25. These field studies were undertaken in cooperation with the archaeological surveys conducted by the Arctic Institute. While in Alexandra Fiord, the field parties used the RCMP facilities.

In the Alexandra Fiord area, along the eastern coast of the island, between Pym Island and Cape Baird, and in the Sverdrup Pass, 24 species of birds were recorded and 16 were ascertained to breed. A total of 170 specimens were collected for taxonomic and geographic variation studies and zoogeographical data. Populations of Ruddy Turnstones (*Arenaria interpres*), Ringed Plovers (*Charadrius hiaticula*), and Red Knots (*Calidris canutus*) were confirmed to belong to Palearctic populations which winter in the temperate parts of the Old World. Other data are currently compiled and analyzed. No nesting populations of Dovekies (*Alle alle*) were found along the coast, although a few had been recorded early in the season. Due to a late season, a number of species which normally breed in the area did not nest in 1979. Nine species of mammals were found in the general area, including a sizeable herd of Muskoxen in Sverdrup Pass.

The botanists collected 272 vascular plants plus 92 bryophytes. Through their activity an inventory of the flora of the area was made, replicates of herbarium specimens were obtained and arctic plants and habitats were photographed. Several localities were sampled in addition to Alexandra Fiord, such as Pym Island, Irene Bay, Bay Fiord, Sverdrup Pass, and the Bache Peninsula.

This field work permits a better understanding of plant and animal distribution in the high arctic and allows comparison with the Greenland fauna and flora.

Plans for 1980-81

Field investigations are planned for June and July, 1980, on the north coast of Yukon, between the Alaska and Northwest Territories borders, to obtain information on bird distribution for zoogeographic analyses. The data and material will provide the basis for an understanding of present bird distribution patterns in Canada and comparison with data and material from the eastern Palearctic and north-western Nearctic regions.

Vertebrate Ethology Section

The High Arctic Research Station was established at Polar Bear Pass on Bathurst Island, NWT, in 1968 in collaboration with the Polar Continental Shelf Project. The Vertebrate Ethology Section undertakes detailed, long-term studies to investigate the relationships between species of arctic animals and the behavioural adaptations that enable them to survive in high arctic environments.



Mr. James and son, Tagish Indians, showing bear skins. In background is a cache and moosehide being smoked. Carcross, Y.T.
Photographer: D. Leechman - 1948

Review 1979-80

The research station was operated from May 23 to August 30, 1979. The following projects were conducted.

Behaviour and Ecology of Muskoxen: During this field season the familiar movement of herds of muskoxen throughout Polar Bear Pass was noticeably reduced. On a helicopter survey flight on July 30, only 54 animals, including six calves, could be located in the Pass and adjacent ranges. Two herds, one of 16 and one of four animals, remained in the lowlands within the Pass throughout the season. Arctic wolves spent many hours with the herds but did not kill any muskoxen. Compared with other seasons, when lemmings were abundant, caribou were seen more frequently and the wolves spent more time in direct association or in sight of the muskoxen.

Ecology of Varying Lemming: In contrast with 1978 season, 1979 was marked by a dramatic disappearance of the lemming population. This "crash" apparently took place in late winter or early spring. Lacking their usual source of food, avian predators especially jaegers, exerted extreme pressure on nesting ducks, shorebirds, and passerines. The absence of lemmings was also reflected in a spectacular reduction in the frequency of arctic fox and weasel observations. Snowy Owls, Pomarine Jaegers, and Rough-legged Hawks did not attempt to nest this year.

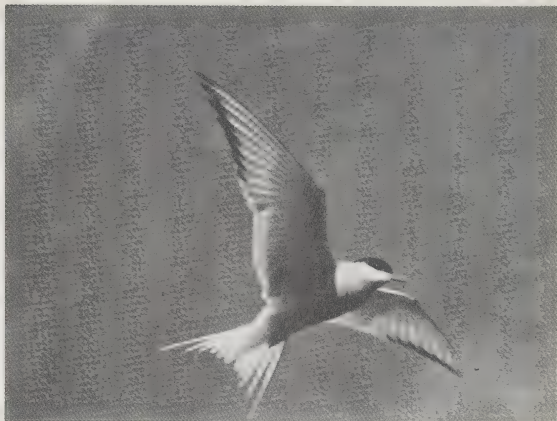
Breeding Bird Census and Banding Program: The extremely late, cold spring limited or prevented breeding attempts by all species of birds. Those which did attempt to breed were subjected to heavy predation pressures, mainly by gulls and jaegers. At least 30 species of birds frequent Polar Bear Pass and adjacent study areas during a "good" summer. In 1979, 15 species were recorded and 12 attempted to nest. Seven species were believed to have successfully fledged at least one young. Five species, totalling 28 birds, were banded and of that number 20 were Long-tailed Jaegers.

The Ecology and Behaviour of Ivory Gulls on Seymour Island: The program terminated at the end of the 1977 field season but one visit is made to the colony each year to monitor reproduction of this rare gull. On July 30, 1979, the colony was found to be reduced by more than 50 per cent. Only 203 adults were present; there were 20 chicks in various stages of development, and 34 additional nests were attended by an incubating adult. Most of the sub-colonies were abandoned and extensive, though random predation by polar bears, was evident everywhere. There was no evidence that arctic foxes had been present.

The Behaviour and Ecology of Sea Birds on the Islets and Polynias of Penny Strait: In spite of living in the midst of an apparently reliable food supply, sea birds in these areas suffered the same high level of predation and reduced numbers as the inland nesting birds. The overall number of adults of all species was dramatically cut and nesting attempts were much reduced. Common Eiders, Brant, Oldsquaws, and Arctic Terns, the most abundant species, were reduced by at least two thirds. Only one Ross's Gull attempted to nest, and produced one egg. It, along with almost all other nests on small islets, was predated by polar bears.

Plans for 1980-81

The future of the High Arctic Research Station is in doubt because of government restraints on spending. During July, two staff members will dismantle the parcoll huts and prepare the site for safe storage of any remaining equipment. Papers reporting on the research conducted at the station will be forthcoming. If possible the seasonal monitoring of Ivory Gulls and Ross's Gulls will continue. ■



Arctic Tern, Seal Island, N.B.
Photographer: Dr. Barbara Deans

Division of Building Research

Review 1979-80

Permafrost ground temperature measurements were continued along the proposed Polar Gas pipeline route from Thompson through Churchill in northern Manitoba to Baker Lake in the District of Keewatin, NWT. Ground temperature observations were made in the high arctic at Alert, NWT, on northern Ellesmere Island.

Research continued into the effects of frost on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone. The work emphasized the nature of the interrelationship of pressure, freezing temperature and heave rate. These studies have produced a means of interpreting heave rates in evaluating the frost susceptibility of soils. Numerical and laboratory model studies of frost heave and the use of heating cables with chilled gas pipelines were continued.

Observations were continued to assess the long-term performance of insulated and uninsulated embankments constructed on permafrost on the Dempster and Mackenzie Highways in the YT and the NWT. Studies of bridge and building foundations were continued at the Eagle River, on the Dempster Highway, and Alert.

Instrumentation was installed on sewer and water lines in Dawson City to assess design and construction methods for utility systems buried in permafrost.

Planning was undertaken for full-scale, long-term tests on various types of foundations in permafrost at an Inuvik test site.

Laboratory studies were continued into the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground.

Laboratory and field studies were continued into saline ice characteristics at Pond Inlet. Investigations of the influence of growth conditions on crystal structure for first year sea ice were also carried out. Heat budget measurements were made during construction of a Panarctic ice drilling platform and the relation between growth conditions and built-up ice platforms was studied. Measurements of ice behaviour around the marine terminal on Strathcona Sound were continued. Observations were made on the ice rubble field built up around a man-made, earth fill drilling island in the Beaufort Sea. Ice conditions were examined during icebreaking trials of the Canmar Kigoriak in the Beaufort Sea and the MV Arctic in the Saguenay River.

At the request of the territorial governments and industry, the DBR Seminar/Workshop on Insulating Existing Houses was presented in Whitehorse and Yellowknife in January, 1979. The DBR Seminar/Workshop on Windows was presented in Yellowknife in October, 1979.

Plans for 1980-81

Field studies will be continued on foundations for various structures and facilities built on permafrost and on the interaction between floating ice and structures. Long-term experiments will be initiated at the Inuvik foundation test site. The program of permafrost ground temperature measurements will be expanded.

Laboratory studies of frozen ground, frost action in soils, sea ice and permafrost foundations will continue.

Research projects on the thermal and moisture performance of buildings in cold climates will be continued.

National Aeronautical Establishment

Review 1979-80

An agreement was negotiated between NRC and the Churchill Research Centre to test and evaluate a 50 kW capacity Vertical Axis Wind Turbine. The power generated will feed directly into the Churchill electrical distribution system. The installation is one of several across Canada aimed at evaluating the performance and operation of the NRC developed VAWT.

Because of the increasing costs of diesel fuel there have been many enquiries for similar projects in the Yukon and the Northwest Territories. They are being considered under the framework of the Federal/Territorial agreement on Conservation and Renewable Energy Development.

Plans for 1980-81

An aerial magnetic reconnaissance of the region between Alert and the North Pole carried out in 1979 will be continued in 1980. The area of interest will be extended to the west, using Resolute Bay and Alert and the two northern base facilities.

The work is being carried out at the request of the Departments of Defence and Energy, Mines and Resources.

Division of Mechanical Engineering

Review 1979-80

Investigations have been conducted by the Marine Dynamics and Ship Laboratory on a 1:50 scale model of a triple screw LNG arctic class carrier of approximately 374 m length overall, 138 000 tonnes displacement and a total installed power of 135 000 kW. Its propulsive characteristics have been determined under simulated ice loads and optimum power distribution in open water, both ahead and astern. In addition the directional wake field for each of the propellers has been established to minimize vibration problems.

In cooperation with the Canadian Coast Guard and the Newfoundland government, the laboratory completed the first phase and is continuing with the second phase of trials on an arctic class 3 icebreaker on Lake Melville, Labrador. During this second phase, when ice conditions are expected to be more severe, the performance of the ship will be measured during various manoeuvres. These trials will not only provide valuable information on the possibilities of winter navigation of Lake Melville but also aid in the advancement of modelling techniques.

Scale models of the icebreaker have been constructed which are to be used by the Ice Committee of the International Towing Tank Conference for comparative model tests. The laboratory has conducted an extensive test program and has also contracted further ice studies to a private Canadian company.

During the year the laboratory participated in the first phase of the dedicated full scale icebreaking trials of the M.V. Arctic on the Saguenay River. A report on trials procedures and torsionmeter calibrations has been issued.

The concept design of the new Arctic Vessel and Marine Research Institute was completed in March, 1980.

Research was continued at the Low Temperature Laboratory on the development of new types of model ice. In addition, field tests on the compressive strength, structure, salinity and temperature profiles of mid-winter sea ice were carried out in association with DBR/NRC. This work was performed in the Beaufort Sea near Tuktoyaktuk.

A cold chamber was constructed in the Hydraulics Laboratory with refrigeration capable of temperatures to -29°C for freezing model ice covers.

The Control Systems and Human Engineering Laboratory completed a study into the effects of 24-hour darkness and 24-hour light on human circadian rhythms. Psychomotor tests were given on four different occasions to radio operators and associated personnel stationed at Resolute Bay. Circadian rhythms of performance were maintained at all times.

Plans for 1980-81

The Marine Dynamics and Ship Laboratory has constructed a model of the M.V. Arctic and model studies in open water with simulated ice loads will be conducted for correlation with the full scale results. Additional full scale trials on the M.V. Arctic are planned.

Design details and contract definition for the Arctic Vessel and Marine Research Institute are to be completed in 1980-81. Construction is to commence in the spring, 1981.

Further development of work begun by the Low Temperature Laboratory on new types of model ice will take place in the Hydraulics Laboratory. The detailed properties of the best types of ice will be determined and evaluations based on sea ice data will be carried out. Basic research to improve structures subjected to moving ice covers is the primary aim of the program.

Division of Electrical Engineering

Review 1979-80

A small project was initiated to measure sea ice thickness from helicopters. An on-going search of related theoretical and experimental work, as well as monitoring other Canadian developments in the field, were continued. An early model of a video-pulse radar operating at 10 MHz was tested in the high arctic in March. The results were encouraging and work has continued. The first model has been modified to provide better packaging for arctic operations from a helicopter, use of a microcomputer, increased receiver gain, and, possibly, increased transmitter power.

Plans for 1980-81

The modified unit will probably be tested in the fall.

Herzberg Institute of Astrophysics

Review 1979-80

Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international worldwide network program. The data are sent on a regular basis to the World Data Center.

Plans for 1980-81

The cosmic ray monitoring program will continue.

Division of Chemistry

Review 1979-80

Part of the natural gas resource of northern Canada is in solid natural gas hydrate deposits. Adaptation of the Soviet Union estimates to Canadian conditions gives about $4 \times 10^{12} \text{ m}^3$ of hydrated gas in permafrost areas of Canada. Detailed evaluation of this resource will require more geochemical and thermodynamic analysis of extensive field data. Laboratory studies of the properties and methods of analysis of gas hydrates have continued.

Plans for 1980-81

Studies of the stability conditions of gas hydrates of the two structural types will be pursued.

Division of Physics

Review 1979-80

A joint project with Environment Canada and the Technological Universities of Zürich and Vienna produced stereo-orthophotos at scales 1:5 000 and 1:10 000 of glaciers on Axel Heiberg Island. These glaciers were earlier mapped by the Photogrammetric Research Section from photographs taken in 1961. One of the purposes of the project is to monitor the changes in the snow and ice cover over the 1961-1977 period.

Plans for 1980-81

Interpretation and measurement of the stereo-orthophotos will be continued at NRC and the University of Zürich. A Minicomputer, developed at NRC, has been ordered by that University from Canadian Instrumentation and Research Ltd. in Mississauga, Ont. The instrument will be tested by NRC and used for the investigations.

Space Research Facilities Branch

Review 1979-80

No space and upper atmospheric research activities were conducted in the North.

Plans for 1980-81

A joint Canada-USA ground science program has been proposed for Cape Parry and Sachs Harbour, during November/December, 1980, in conjunction with a proposed NASA rocket launching.

The joint Canada-USA sounding rocket program for investigations in the dayside cleft at Cape Parry, during the winter of 1980-81, have been postponed to the 1981-82 period. ■

Northern Canada Power Commission

NCPC

Responsibilities

The Northern Canada Power Commission (NCPC) is a federal crown corporation operating under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis. NCPC surveys utility requirements and constructs utility plants in the Northwest Territories and the Yukon.

The commission is the principal producer of electrical energy in Northern Canada and operates the main transmission networks in the YT and NWT. In addition, it operates community heating, water and sewage systems in several locations.

The authorizing Act requires that operations of the commission be self-sustaining within each rate zone. Consequently, rates charged for utilities must yield sufficient revenue to cover interest on investment, repayment of principal, operating, maintenance and administrative expenses, and a contingency allowance sufficient to meet unforeseen or emergency expenditures.

Review 1979-80

During 1979-80 fiscal year, the commission provided retail electric utility service to 49 communities in the NWT, four communities in the YT and Field, British Columbia. The commission also supplied wholesale electrical energy to the local electrical distributors in Yellowknife, Whitehorse, Haines Junction, Ross River, Carmacks and Keno City. This service was provided from a total of seven hydro-electric plants and 52 diesel-electric plants.

The commission also supplied retail central heat, water and sewage utility service in Inuvik, NWT, as well as wholesale central heat utility service to the Government of the Northwest Territories at Frobisher Bay. In the interest of energy conservation and overall efficiency of operation, the commission provided waste heat from its diesel generating plants to various customers at Dawson City, Cambridge Bay and Igloodik.

Electrical generating capacity increased by 2560 kW during the year, brought about by the installation of diesel generating equipment at Arctic Bay, (400 kW); Arctic Red River, (80 kW); Cape Dorset, (600 kW); Fort Franklin, (300 kW); Fort Norman, (300 kW); Gjoa Haven, (300 kW); Holman Island, (300 kW); Paulatuk, (100 kW); Pelly Bay, (300 kW); and Pond Inlet, (600 kW). Several diesel units totalling 720 kW capacity were removed from Arctic Bay, Cape Dorset, Fort Norman, Gjoa Haven, Holman Island, Paulatuk and Pelly Bay, to facilitate installation of large units in each community.

Major distribution system extensions were constructed in the NWT at Rae, Edzo, Fort Resolution, Pine Point, Cambridge Bay, Spence Bay, Chesterfield Inlet, Repulse Bay, Pangnirtung, Broughton Island, Fort McPherson, Sachs Harbour, Fort Good Hope and Fort Smith, and at Mayo, YT. Construction of a 28 km extension to the 34.5 kV transmission system at Whitehorse, to service the Marsh Lake area near that city, was completed in the fall.

Total electrical generation during fiscal year 1979-80 was estimated at 750 586 000 kWh, comprising 578 595 000 kWh by hydro generation and 171 991 000 kWh by diesel-electric generation, an increase of 3 742 000 kWh (.5 per cent) over 1978-79. Electrical sales in Yukon were approximately 316 296 000 kWh, an increase of 1.7 per cent over the previous fiscal year. Electrical sales in the Northwest Territories totalled approximately 362 516 000 kWh, an increase of 0.7 per cent over 1978-79. The non-coincidental peak demand on all operations during the year was 134 916 kW, a decrease of 0.5 per cent over the non-coincidental peak demand of 135 594 kW in 1978-79.

Plans for 1980-81

Projected significant operating statistics for the 1980-81 fiscal year include the following:

Estimated electrical generation	755 333 000
Estimated electrical sales	681 719 000 kWh
Estimated central heat sales	391 000 x 10 ⁶ BTU
Estimated fuel consumption (diesel generation and central heating system)	14 970 500 gallons
Total employee man-years	330
Total number of communities directly serviced by the commission	54
Total number of communities serviced indirectly by the commission (wholesale supply to local distributors)	6

Major capital projects proposed for the fiscal year include:

Installation of reactor at Yellowknife substation	\$170 000
Improvements to Snare Hydro protection system	150 000
Upgrade 2.5 MW diesel unit at Pine Point	50 000
Mayo hydro plant rehabilitation	230 000
Rebuild Wareham Lake spillway at Mayo	250 000
Installation of 138/34.5 kV, 25/33/42 MVA transformer at new Whitehorse substation	500 000
Installation of additional fuel storage tanks at Frobisher Bay	20 000
Fuel storage improvements at Fort McPherson	60 000
Automatic voltage regulators at Taltson hydro plant	142 000
Fuel storage and transfer improvements at Norman Wells	40 000
Sewage disposal for Baker Lake housing	50 000
Cooling system improvements in Baker Lake diesel plant	35 000
Additional distribution feeder line at Tuktoyaktuk	53 000
Substation protection at Tuktoyaktuk	85 000
Additional 600 kW diesel unit at Tuktoyaktuk	200 000
1.5 million L fuel storage and filling line at Rankin Inlet	130 000
Fuel storage improvements at Arctic Red River	80 000
Installation of distribution feeder panel at Spence Bay	25 000
Additional fuel storage at Holman Island	40 000
Installation of 300 kW diesel unit at Whale Cove	85 000
Installation of 600 kW diesel unit at Eskimo Point	70 000
Purchase of 3000 bbl. fuel storage tank for Eskimo Point	75 000
Installation of 900 000 L fuel storage tank at Grise Fiord	35 000
Improvements to fuel storage at Paulatuk	100 000
Installation of 150 kW diesel unit at Snowdrift	65 000
Gauging and level stations at Aishihik hydro	50 000
Distribution extensions to service new subdivision at Faro	60 000
Remote control of Faro reactor and breaker from Whitehorse control centre	55 000

■

Responsibilities

The Northern Pipeline Agency was established in April, 1978, under authority of the Northern Pipeline Act. The agency oversees the two basic objectives of the legislation: to facilitate and expedite planning and construction of the 3 240 km Canadian segment of the Alaska Highway gas pipeline; and to ensure that construction and operation of the system maximizes the economic, industrial and energy benefits for Canada, while keeping adverse social and environmental impacts to a minimum.

The pipeline will carry natural gas from Alaska along a route which closely follows the Alaska Highway through the Yukon Territory and northeastern British Columbia before branching through southern Alberta, British Columbia and Saskatchewan into the United States. A future pipeline along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

Under the Canada-U.S. Agreement of September 20, 1977, the U.S. pays for all or part of the cost of transporting gas through this pipeline between Dawson and Whitehorse. This will be under a formula related to the costs of the Canadian segment of the pipeline and the volume of Canadian gas flowing through the system.

Review 1979-80

Public hearings were held in nine Yukon communities in March and April, 1979, to receive thoughts on the proposed socio-economic and environmental terms and conditions governing construction and operation of the Alaska Highway gas pipeline. Representations made at the hearings were considered in formulating the terms and conditions for submission to the Governor in Council, around mid-1980. Once approved, the terms and conditions will become legally binding as part of the Certificate of Convenience and Necessity issued to Foothills Pipe Lines (South Yukon) Ltd., which is responsible for building the Yukon segment of the pipeline.

Hearings were also conducted on the Environmental Impact Statement filed by Foothills in January, 1979, under requirements of the federal Environmental Assessment Review Process. The panel responsible for review of this statement issued an interim report in September, 1979, recommending that Foothills Pipe Lines (South Yukon) Ltd., provide additional information for consideration at further public hearings.

Foothills submitted an application to the National Energy Board July 1, 1979, for permission to construct the Dempster Lateral to transport gas from the Mackenzie Delta area to Whitehorse. No date has been set for hearings.

During the summer months, Foothills undertook a fisheries surveillance and sampling program and an archeological survey along the preferred pipeline route. An experimental revegetation program was also conducted on a selected part of this route. The pipeline company carried out geotechnical drilling programs in summer and winter to test water and soil conditions.

Community information sessions were conducted in January, 1980, by Foothills and the agency in Yukon communities along the pipeline route on measures to minimize problems of inflation, immigration and work camp/community interaction during pipeline construction. A Northern Business Briefing, cosponsored by the Whitehorse Chamber of Commerce and the company, provided Yukon and Northwest Territory residents with a more detailed description of the pipeline project and a realistic assessment of job and small business opportunities.

Senior officers of the agency made trips to Yukon to consult with representatives of the Yukon Territorial Government and Advisory Council. In addition, Yukon government representatives and agency officials attended the quarterly meetings of the Federal-Provincial-Territorial Consultative Council in Yukon and elsewhere during the year.

The Canada-Yukon Memorandum of Agreement was signed in September, 1979.

Plans for 1980-81

Foothills will prepare plans on socio-economic and environmental terms and conditions for review and approval by the agency. Logistics, transportation and manpower plans will also be developed by Foothills for review and approval.

The agency will continue to work with federal departments, the Yukon government and Foothills to complete right-of-way selection for the pipeline through Yukon. The company undertook preliminary surveying of the southern boundary of the preferred alignment north of Kluane Lake in the spring, 1980, along with geotechnical and geophysical field programs. The Kluane Lake bottom was also drilled from an ice bridge to confirm lake bottom characteristics. The surveying, geotechnical and geophysical work will continue south of Kluane Lake to the Watson Lake area during the summer of 1980 in preparation for right-of-way clearing, scheduled to start in 1981, and construction, in 1982.

Throughout the year, the agency will conduct surveillance of Foothills activities to ensure compliance with the regulations. Federal responsibilities, powers, duties and functions that relate specifically to the pipeline project in the Yukon will be transferred to the agency.

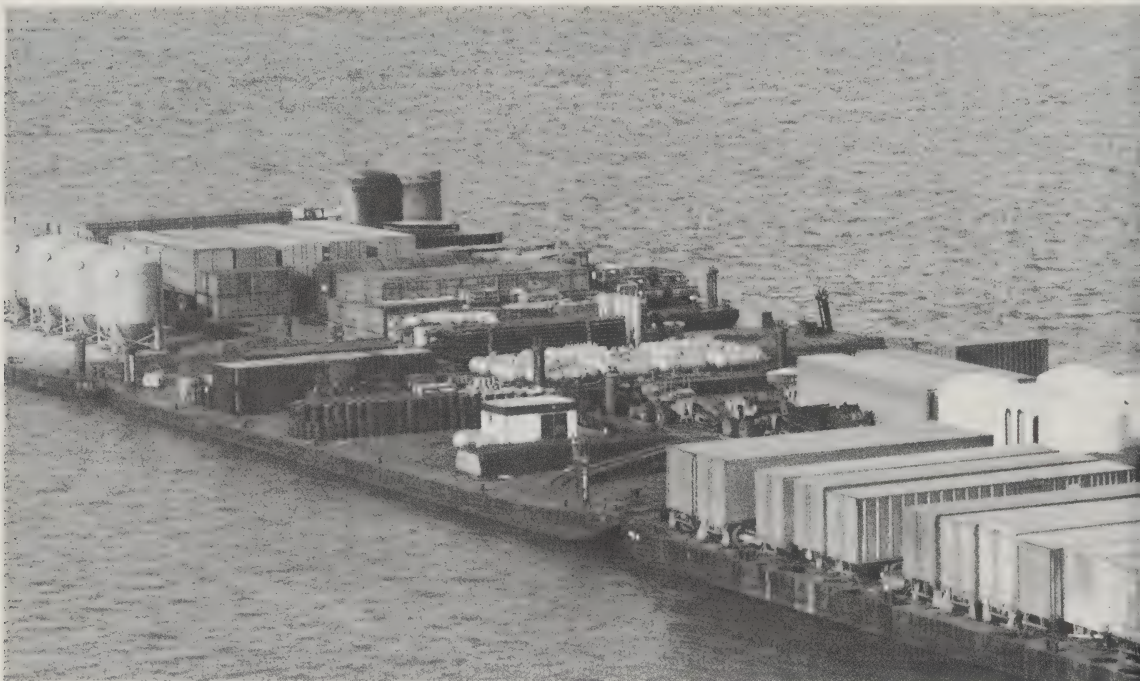
An administrative agreement relating to non-discriminatory taxation and general cooperation on the pipeline will be negotiated by the agency this year between the Government of Canada and the Government of the Yukon. ■

Northern Transportation Company Limited

NTCL



Cargo must be loaded and offloaded quickly to meet sailing schedules during the operating season. Here, the *M.V. Matt Berry* positions barges at Norman Wells.



There has been a significant increase recently in containerized and trailer-loaded cargo.

Responsibilities

Northern Transportation Company Limited is a Canadian company, incorporated under federal legislation and continued under the Canada Business Corporations Act. The company's objective is to provide economic, reliable and comprehensive transportation services on a profit-oriented commercial basis throughout northern Canada and the arctic.

The company has operated throughout the Mackenzie River watershed since 1934 and along the western arctic coast and islands since 1957. In response to a federal government commitment at the 1973 Western Economic Opportunities Conference, the company inaugurated the Keewatin operations out of Churchill, Manitoba, in 1975 and has since provided resupply services to five communities along the west coast of Hudson Bay and Coral Harbour on Southampton Island.

Northern Transportation forms the principal transportation link for the movement of bulk petroleum products and dry cargo to isolated communities and exploration and mining sites in northern Canada. Goods originate primarily from Canada's three most northerly railheads, Fort McMurray, Alberta; Hay River, Northwest Territories and Churchill, Manitoba.

The company's maritime route system extends over 8 000 km and is served by a fleet of three coastal ships, 26 tugs and 167 dual purpose barges, grossing in aggregate 90 000 tonnes of cargo capacity.

The Mackenzie River and arctic sectors comprise by far the largest segment of the company's marine operations. Freight is transported from Hay River on Great Slave Lake down the Mackenzie River to Tuktoyaktuk, east along the arctic coast to the lower arctic islands and the Boothia Peninsula and west to the north slope of Alaska. The Athabasca system, which comprises the waterways of the Athabasca, Slave and Peace Rivers, as well as Lake Athabasca, serves the communities of Fort Chipewyan, Fond du lac, Stony Rapids and the mining community of Uranium City.

The operating season is short. Shipping in the Athabasca starts approximately May 15 and traffic rarely moves down the Mackenzie before the end of July. By late September or early October, all cargo must be delivered and the equipment returned to home ports before freeze-up. Low water, a common occurrence in the Athabasca region and along the Mackenzie River, often forces special shallow draft equipment to drastically reduce cargoes.

Northern Transportation maintains major operating terminals at Fort McMurray, Alberta; Bushell, Saskatchewan; Churchill, Manitoba, and Hay River, Norman Wells, Inuvik and Tuktoyaktuk in the Northwest Territories.

Grimshaw Trucking and Distributing Ltd., a wholly-owned subsidiary, provides a general merchandise trucking service from Edmonton and Calgary to a number of northern communities in Alberta and three major centres in the Northwest Territories. Grimshaw operates 31 tractors and 170 trailers as well as a number of pickup and delivery units. Marine and trucking operations interface at Fort McMurray in Alberta and Hay River in the Northwest Territories.

Review 1979

During 1979, 313 526 tonnes of cargo was handled - a slight improvement over the previous year. A substantial gain was achieved in the Athabasca region, reflecting increased activities in the uranium industry. The Mackenzie River and Keewatin sectors showed modest increases. There was a reduction in freight for Alaska's north slope, due to a temporary surplus of drilling materials and a loss of traffic to the road system now open from Fairbanks.

An increase in the number of trailer and contained shipments reduced cargo handling and contributed to improving productivity in terminal operations.

The Athabasca sector experienced low water levels and a fire at an oil production facility in northern Alberta disrupted the company's operating plans. Following the resumption of production, additional marine equipment had to be portaged and relocated from Hay River to Fort McMurray to cope with increased product delivery.

Multi-year ice drifts east of Cambridge Bay in the arctic necessitated icebreaker assistance from the CCGS Franklin to achieve passage eastward to the Boothia Peninsula.

The company delivered all cargo which was tendered and returned its fleet to wintering bases.

Plans for 1980

The company is cautiously optimistic over the short term, particularly in view of the current expansion in oil and gas exploration activities in the Beaufort Sea. These developments should generate greater demands for marine transportation service and equipment support. In addition, a slight increase in Alaska tonnage is anticipated during 1980.

Certain factors may, however, have an adverse effect on the company. These include the continuing depressed economy in the Northwest Territories, extension of northern highways and the possible reduction in tax incentives for frontier oil exploration. The completion of the electric power development project at Charlotte River in northern Saskatchewan is expected to bring about a reduction in bulk fuel requirements in the Uranium City area. The major overall concern relates to continually rising costs for labour, operating supplies, and fuel. ■

Post Office Department

PO

Les Inuit et la poste



A Frobisher, une employée fait re-
mandre du courrier souvent des
revient à ceux des lieux qui sont
reçus ou qui envoie tout un se-
rieux administratif. C'est plus simple que
d'ailleurs.

« Il faut donc, n'écrit pas vaine-
ment pour le poste, les envoient
leurs salaires par la poste, parent
leurs comptes de la même façon
et commandent eux aussi par
délégation.
Le code postal les renseigne enco-
rement, plusieurs l'ont com-
mencé, maintenant. S'ils doivent écrire
à leur sud, c'est à St-John, Montréal,
à Toronto ou ailleurs du pays
en téléphonant au bureau de poste
ou à demander le code des régions
ou à l'adresse de votre agence postale.

Entre les localités du Nord, le code
ne sert évidemment pas puisqu'elles
bureaux du Nord ne sont pas méca-
nisme, mais il est utile pour tout ce qui
provient du sud, et pour tout ce qui
est acheminé vers le sud. Aussi, les
Inuit se font un point d'honneur de
consigner leur code même si certains
d'entre eux ne savent ni lire ni écrire.
En effet, le plupart des Inuit du Nord
peuvent seulement apposer leur si-
gnature sur les documents concer-
nés. C'est d'Arctic Bay se rendent
régulièrement à Nanisivik, 20 milles
plus loin pour les mandats, poste et
les envoies contre remboursement.

The Inuit and the Post Office



The Inuit are good customers for the
Post Office. About 3,600 pounds of
mail are delivered every month to
Arctic Bay, a typical Inuit village.
Before the white man came, the Inuit
would never travel for the specific
purpose of passing on news. While
visiting each other as they ordinarily
did, the inhabitants of the various
communities would peddle the latest
gossip and exchange their treasures
as the need arose.

Nowadays, they make use of the ma-
chine as much as the white man.
They too are dependent on the
postal service, even though many of
them do not know how to write and
rarely correspond with to look on
news of themselves to others.
An employee at Frobisher points out
that they often send cassioles to their
own people who are far away or in
hospital. It's much easier than writing.
So the Inuit do not really write to the
post office. Their mail comes by
mail, they pay their bills by mail, and
they too order from mail order
catalogues.

The postal code captivates their interest
and many use it conscientiously.
Should they have occasion to write to
the South, that is to say, Montreal, or
anywhere else in the country, they
call the post office to ask for the
postal code of the region to which the
letter is being sent.

Traditionally, mail going between com-
munities was done by messenger, de-
coded since the northern mail is not
mechanized, but postal codes are
useful for everything coming from
outside the North. For this the Inuit
have a point of knowing their code,
even if some of them cannot read or
write.

In fact, most of the order Inuit are only
able to sign their names on docu-
ments. The Arctic Bay Inuit have to
go to Nanisivik, 20 miles away, for
money orders and C.O.D. service.

Responsibilities

Canada Post provides basic national postal service to all Canadians for the same costs. Along the well-established transportation networks this service is economical. Service in remote areas, particularly north of 60°, does not yield financial return to cover costs.

Prior to 1955, scheduled commercial flights to arctic communities were non-existent. The Post Office relied on courtesy flights by airlines and government agencies, such as the RCMP, to deliver the mail on a space-available basis. Most mail, however, was transported during the summer on eastern arctic supply vessels operating between Montreal and Churchill.

Today Canada Post seeks to provide the best possible mail service to the North, using commercial transportation services.

Two postal regions are responsible for the mail service to the North. The Quebec Region is responsible for service to the east side of Hudson Bay, the Ungava Bay area and the eastern arctic, including the District of Franklin, except Sachs Harbour on Banks Island. The Western Region covers the District of Keewatin, the District of Mackenzie, the Yukon Territory and Sachs Harbour. The post office at Sanikiluaq, Belcher Islands, is south of the 60th parallel but since it is on an island in Hudson Bay, is considered to be a part of the northern operation.

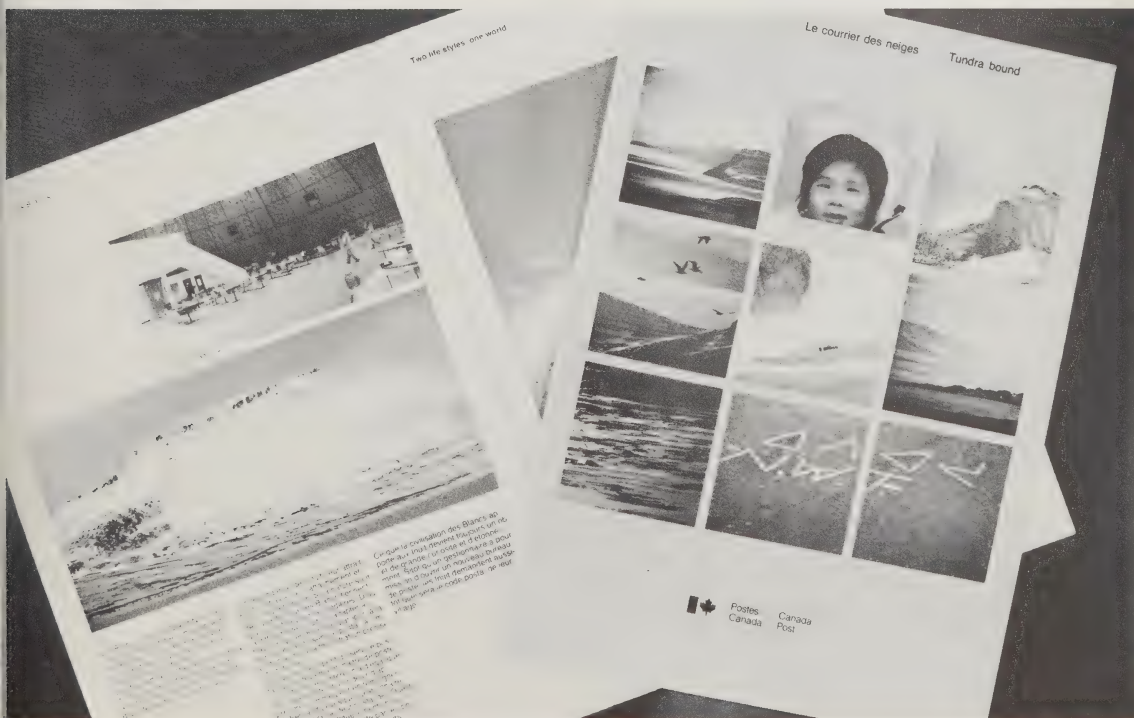
Currently there are 78 post offices in the North, in many settlements these are run by individual firms, or organizations on behalf of Canada Post.

Some northern residents receive their mail by courtesy bag service whereby it is processed by Canada Post and placed in bags for mining company or oil exploration company delivery to their own personnel.

Canada Post maintains constant contact with agencies in the Yukon and the Territories so that the postal needs of a growing northern population can be met.

Review 1979-80

The number of post offices changes with conditions. If a post office serves a remote mine, for example, and the operation closes, so does the post office. This occurred at Clinton Creek in Yukon. The post office at Snowdrift, Northwest Territories, closed for a period in 1978 when no postmaster was available; it reopened on a permanent basis in 1979.



Tundra Bound, a 16-page colour brochure published by Quebec Postal Region's Public Affairs Branch features the story of mail distribution in Canada's Far North.



A special treat for those visiting the Post Office House in Montreal . . . a slide show featuring the role played by the men and women of the Canadian Post Office in the Far North.

In 1979 the new air service, which was negotiated to link Yellowknife and Frobisher Bay, substantially improved the mail service between the territories and surrounding areas. Also in 1979, a new surface route using commercial bus between Inuvik and Arctic Red River, was utilized by Canada Post.

In the fiscal year ending March, 1980, mail transportation within the Yukon cost \$334 043 plus the cost of transportation to Whitehorse for distribution. Costs for carrying mail by air from Vancouver to Whitehorse were \$1 020 000. Highway transportation costs from Dawson Creek to Whitehorse were a further \$349 970 for the same period.

Inuit postmasters are now working throughout the territories, and the Inuit are good customers of the Post Office. For example, 1600 kg of mail are delivered each month to Arctic Bay.

In order to promote wider understanding of Canada Post service in the North, the Quebec Region produced a multi-media presentation in 1979. A colourful, illustrated booklet, *Tundra Bound* was also produced by the Quebec Region and given wide circulation. The slide show and the booklet not only show Canada Post's role north of 60°, but help to develop a better appreciation everywhere of the North, its people and way of life.

Plans for 1980-81

Early in fiscal 1980-81 a new surface mail route will link Inuvik and Fort McPherson.

Canada Post will maintain its close contact with local agencies so that new postal facilities and services can be introduced to meet needs as they arise. Canada Post will also continue to encourage native people to apply for employment with the Post Office. ■



Post Offices North of the 60th Parallel

- | | | | | | |
|----------------------|----------------------|-------------------------------|------------------------|---------------------|---------------------|
| 1. Alert | 15. Hall Beach | 29. Elsa | 42. Faro | 56. Sugluk | 70. Fort Providence |
| 2. Eureka | 16. Old Crow | 30. Fort Good Hope | 43. Ross River | 57. Deception Bay | 71. Fort Resolution |
| 3. Grise Fiord | 17. Aklavik | 31. Mayo | 44. Destruction Bay | 58. Maricourt | 72. Hay River |
| 4. Mould Bay | 18. Inuvik | 32. Frobisher Bay | 45. Carmacks | 59. Koartac | 73. Pine Point |
| 5. Resolute | 19. Fort McPherson | 33. Beaver Creek | 46. Coral Harbour | 60. Haines Junction | 74. Fort Smith |
| 6. Nanisivik | 20. Arctic Red River | 34. Pelly Crossing | 47. Tungsten | 61. Whitehorse | 75. Povungnituk |
| 7. Pond Inlet | 21. Cambridge Bay | 35. Norman Wells | 48. Baker Lake | 62. Snowdrift | 76. Bellin |
| 8. Arctic Bay | 22. Spence Bay | 36. Fort Norman | 49. Chesterfield Inlet | 63. Carcross | 77. Sanikiluaq |
| 9. Sachs Harbour | 23. Pangnirtung | 37. Fort Franklin | 50. Rae | 64. Tagish | 78. Pelly Bay |
| 10. Clyde | 24. Gjoa Haven | 38. Port Radium
(Echo Bay) | 51. Yellowknife | 65. Fort Simpson | |
| 11. Broughton Island | 25. Coppermine | 39. Wrigley | 52. Rankin Inlet | 66. Teslin | |
| 12. Tuktoyaktuk | 26. Repulse Bay | 40. Cape Dorset | 53. Whale Cove | 67. Swift River | |
| 13. Holman | 27. Clinton Creek | 41. Lake Harbour | 54. Eskimo Point | 68. Watson Lake | |
| 14. Igloodik | 28. Dawson | | 55. Ivuvik | 69. Fort Liard | |

Public Service Commission of Canada

PSC

Responsibilities

The Public Service Commission of Canada (PSC), an autonomous agency accountable to Parliament for the administration of the Public Service Employment Act (PSEA), ensures that the merit principle is upheld in staffing actions. The PSC develops and administers open standards for selection of candidates for positions in the public service; provides and operates redress mechanisms for appointments challenged as violations of the merit principle; and audits the manner in which staffing authority has been exercised.

The commission administers the Public Service Employment Act relating to the political activities of public servants, ensures equality of access to the public service for all Canadians, conducts and advises on training and development programs, and investigates discriminatory treatment in the public service.

Review 1979-80

Native Employment

The Office of Native Employment continued to promote employment and career opportunities for the native people in federal departments and agencies in the North. Native employment coordinators are located in PSC District Offices at Whitehorse and Yellowknife.

The Office of Native Employment was instrumental in establishment and development of the Joint Council and Work Group. The Joint Council and Work Group have representatives from the two central agencies, the Public Service Commission and Treasury Board Secretariat, and from the five national indigenous associations, namely the National Indian Brotherhood, Native Council of Canada, Inuit Tapirisat of Canada, National Native Women's Association and the National Association of Friendship Centres.

The Joint Council reviews the progress made towards achieving departmental native employment action plans and evaluates the results.

The related Work Group, which reports to the Joint Council, reviews and summarizes departmental action plans and forms overall implementation of the native participation policy.

Northern careers territorial program managers will work together with the Office of Native Employment coordinators in analysing action plans so that the wider possibilities for Northern Careers Program participation can be determined.

The Joint Council will report to Cabinet on the progress of policy implementation with departments by the end of June, 1980.

On June 21, 1979, the Public Service Commission informed departments how to apply the policy on increased participation and representation of Indian, Métis, Non-Status Indian and Inuit in the Public Service. Basically, wherever staffing action is taken to fill a position directed toward indigenous people, appropriate representatives of indigenous people shall be invited to participate in all phases of the selection process.

The Northern Careers Program

The Northern Careers Program recruits and trains participants from the northern native population. Participants begin as conditional employees of the commission and, with individually designed career and training plans, undertake on-the-job and formal training for up to two years to prepare them to compete for permanent positions in the northern labour force.

The program, sponsored by the Department of Indian Affairs and Northern Development, is operated by the PSC for all 17 federal departments represented in the NWT and Yukon. Recently two autonomous operating units were established in Yellowknife and Whitehorse to better serve the differing program requirements in the two territories. Policy direction and coordination is provided through an Ottawa unit.

At December 31, 1979, 199 Indians, Inuit and Métis had been recruited. Of these, 58 have completed full career plans and have "graduated", while an additional 35 have transferred to positions equal to, or higher than they held at entry. These transfers are conscious career choices by participants, who retain eligibility to return to the program. Thirty-five participants have withdrawn entirely from the program and 68 are currently undergoing training. Many of the participants who withdraw from the program have secured new and better employment with other levels of government in the North.

Staffing Branch

In April, 1979, the Staffing Branch opened a district office in Yellowknife which, in conjunction with the district office initiated last year in Whitehorse, provides a full range of staffing services to federal organizations, employees, and the public located north of 60°. These units facilitate the filling of northern positions on a timely and economic basis from local inventories of qualified applicants established by departments. To complement this, an employment information and counselling service is available to northerners and a concerted effort is made to tailor recruitment activities so as to maximize the exposure of northerners to federal opportunities. The units also provide qualitative and accessible advice and assistance to local federal managers undertaking personnel actions affecting northern operations.

These district offices have enrolled more than 1 000 qualified and interested applicants. The system has already proven itself, for in 1979-80, 200 positions of a scientific, professional, technical, or administrative nature were filled by this means.

Plans for 1980-81

The forecasted 1980-81 expenditures associated with PSC activities in the North are: 78 person-years and \$2 247 000.

Native Employment

The Office of Native Employment will continue to improve employment prospects for native people in federal departments and agencies in the North.

The PSC will issue a new bulletin on staffing in the North to set out important improvements in northern staffing. Support will be given to departmental efforts at training and developing northern staff.

The Office of Native Employment will ensure that indigenous people are involved in the staffing of positions in the North.

Northern Careers Program (NCP)

At year end, plans were being developed to extend NCP opportunities to native peoples in the eastern arctic, where program penetration has been limited. Discussions are also under way to develop joint, cost-shared programs for northern natives to train for positions and careers in other levels of government or private sector organizations in the North.

Staffing Branch

The district staffing offices look to continuing success in familiarizing northern managers and residents with the range of services offered and to expanding application inventories to meet all departmental needs. ■

Department of Public Works

DPW

Responsibilities

Public Works Canada responsibilities in the Northwest Territories are divided into five major categories: Accommodation, Marine, OGD Accommodation, OGD Marine, and OGD Transportation.

Review 1979-80

Over the past year, Public Works Canada studied the organization used to carry out its responsibilities in the NWT. These responsibilities were divided between two departmental regions. Effective April 1, 1980, responsibility was changed to Western Region. Activities carried out in the eastern arctic (including Baffin Island) through Quebec Region were transferred to Western Region headquarters in Edmonton, Alberta.

Due to the federal restraint program, PWC spent only \$967 000 on accommodation projects in the NWT during 1979-80. Of this total, \$225 000 was earmarked to complete site development work for the recently-completed 47-unit row housing project in Yellowknife.

Approximately \$730 000 was expended for site acquisition and development for a planned 50-unit housing project in Frobisher Bay.

PWC Accommodation projects for Fiscal Year 1980-81 will entail the expenditure of \$458 000, primarily for continuing preliminary work on the housing project in Frobisher Bay.

Public Works Canada carries out construction and project management on behalf of other government departments.

Due to fiscal restraint, the Health and Welfare Canada activity for 1979/80 was greatly reduced from previous years. Expenditures totalled \$330 000, primarily for project design work for various locations in NWT.

The Eskimo Point Facility was completed at cost of \$875 000.

In Fort McPherson, re-roofing the nursing station was completed at a cost of \$80 000.

HWC 1980-81 projects include nursing stations at: Cape Dorset, \$1 450 000; Arctic Bay, \$840 000; Repulse, \$840 000; Lake Harbour, \$585 000; Grise Fiord, \$585 000; Fort Norman, \$200 000; Fort Good Hope, \$220 000.

RCMP construction expenditures for 1979-80 totalled \$1 015 000. These funds covered the completion of detachment and married quarters at Baker Lake and Eskimo Point and substantial work on detachments at Hay River and Rankin Inlet.

Projects planned for 1980-81 include work at Inuvik, Pond Inlet, Yellowknife, Pine Point and Tuktoyaktuk.



Threading piles on Cambridge Bay wharf extension



Pile driving completed on front and east walls.

Construction spending for Indian Affairs and Northern Development totalled \$274 000 in fiscal year 1979-80 with the completion of the Yellowknife Assay Laboratory and the start on the Fort Smith storage and vehicle maintenance garage.

Fiscal year 1980-81 expenditures could total \$625 000 for completion of the Fort Smith building and construction of the Yellowknife storage addition.

Approximately \$2 million was spent in 1979-80 on gravel surfacing on the Dempster Highway in the NWT. The work will continue into 1980-81 with an expenditure of \$1 million.

An estimated \$6 million was spent in 1979-80 on the Liard Highway construction contracts. The majority of the grading construction to the Blackstone River was completed. Tenders have been awarded for the Blackstone River Bridges and for grading. Tenders are scheduled for late summer, 1980, for grading south. Estimated contract expenditure on the Liard Highway in 1980-81 will be \$10 million.



Ice cutting.

Western Region

Marine Division

Contracts for a total expenditure of approximately \$500 000 were awarded and/or carried over from the previous fiscal year. For Cambridge Bay, wharf improvements; Fort Providence, Canadian Coast Guard Wharf; Yellowknife, reconstruction of the public wharf.

Maintenance expenditures were in excess of \$40 000 for the launching, haulout and maintenance of floating wharves at Fort Simpson, Fort Norman, Fort Good Hope and Aklavik and for minor repairs to wharves at Fort Franklin, Great Bear River and Norman Wells.

Public Works dredges carried out dredging along the Mackenzie River at Hay River east channel; Beaver Lake, Mile 28; Sans Sault Rapids; Hay River, commercial wharves. The total cost was \$750 000.

Some investigative work was done on behalf of the Small Craft Harbours Branch, Department of Fisheries and Oceans, for a small craft marina at Yellowknife. Preliminary reports were prepared for possible dredging for a harbour at Sulphur Cove, Great Slave Lake. An annual inspection and report of the emergency test short protection installation was carried out at Tuktoyaktuk. Assistance was provided to the government of the NWT for harbour development planning at Tuktoyaktuk. On behalf of the Department of Transport, feasibility studies were carried out for a proposed wharf/storage area, warehouse and road at Frobisher Bay.

In Haines Junction, the Kluane National Park Administration Building and Information Centre was substantially completed. The project, consisting of approximately 900 m² of office space to accommodate administration and information services for Parks Canada, will cost \$1 254 000.



Ice cutting underway. Chainsaw equipped with 8 ft. blade.



Ice cutting underway.

Highways

Review 1979-80

The Government of the Yukon, under agreement with Public Works Canada, continued to carry out the maintenance of the North West Highway System (Alaska Highway and Haines Road, west of the B.C.-Yukon border crossing). The work consisted of routine maintenance, the application of calcium chloride, 60 km of emulsified asphalt and crushed aggregate cover, BST (Bituminous Surface Treatment), and minor grade improvements in the Beaver Creek work area. The total 1979-80 cost was \$7 765 000.

East of km 1008, the routine maintenance was performed under three highway maintenance contracts supervised by Public Works Canada. Resurfacing and BST from km 869 to 996 was satisfactorily completed bringing the total so treated in B.C. to 225 km between Fort Nelson, B.C., and Watson Lake, Yukon. A four-day closure of the highway between Fort Nelson and Muncho Lake resulted from localized washouts. Expenditures for 1979-80 in this section of the Alaska Highway were \$9 024 000.

The Departmental Capital Program was down from the previous year to a total of \$13 167 000. Of the total, \$5 163 000 was spent for upgrading and paving the Alaska Highway in the Yukon, \$1 112 000 for upgrading bridges in B.C.; and the balance of \$6 892 000 for upgrading and paving the Alaska Highway in B.C. Projects undertaken in the Yukon were: grade construction, km 1001 to 1014; grade construction, km 1025 to 1044; paving, km 1493 to 1510.

The Shakwak Project, (U.S. - Canada project for upgrading the Haines Road and the Alaska Highway north of Haines Junction, Yukon) started in 1978-79, cost was \$9.6 million in 1979-80. The major projects were for clearing, subgrade and sub-base construction on 81 km of road. Subgrade construction was carried out on 10 km of the Alaska Highway.

The Department of Indian Affairs and Northern Development's new road program in the Yukon is complete and the work has turned to upgrading the existing highway system. Public Works site surveys and foundation investigations for new bridges crossing the Francis and Hyland Rivers on the Nahanni Range Road were undertaken.

Plans for 1980-81

Highway maintenance of the Northwest Highway system will continue under the same contractual arrangements as in previous years. An additional 93 km in the Yukon and 159 km in B.C. will be treated with emulsified asphalt and crushed aggregate cover as part of the continuing program to reduce dust and highway maintenance costs. In addition the newly-constructed grade from km 356 to 394; from km 1001 to 1014; and from km 1025 to 1044 will receive BST to provide an acceptable standard of maintenance until the areas are paved.

The Public Works Capital Program in the Yukon will amount to \$4 million and will include: complete grade construction km 1001 - 1014 (5 km of this project is in B.C.); first year of a two-year contract to construct new grade between km 1365 - 1390.

The balance of the Public Works program, with the exception of 1 km, will be in B.C. and consists of reconstruction and bridge contracts at a cost of \$10.9 million.

The Shakwak Project will continue with emphasis for work on the Haines Road. It will include clearing, grubbing, sub-grade, base course, BST and a bridge at Five Mile Creek.

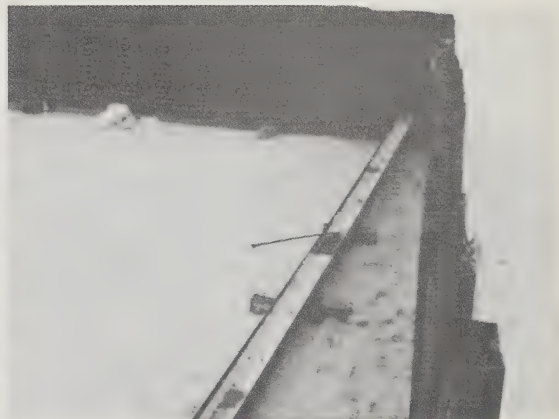
Ten kilometres of the Alaska Highway will receive subbase, base and BST. ■



Lifting out a texan ice cube, ice 6 - 7 ft. thick.



Junction with old wharf. A layer of ice approximately 1 ft. thick extended about 2 ft. below bottom level of surrounding ice.



Face of wharf piling alignment.



Back wall alignment, piling cutoff's completed.

Department of Regional Economic Expansion

DREE

Responsibilities

DREE plans and coordinates programs to overcome regional economic disparities in Canada. DREE participates in planning and implementation of socio-economic programs for northern areas requiring special development assistance with the territorial governments, the Department of Indian Affairs and Northern Development, and other federal agencies.

Northwest Territories

Review 1979-80

In April, 1979, a General Development Agreement (GDA) and an Interim Subsidiary Agreement on Community Economic Development were signed by DREE and DIAND with the government of the Northwest Territories. The GDA established a general framework for joint federal-territorial cooperation in planning and implementing measures for economic and social development. The Community Economic Development Subsidiary Agreement aims at expansion of the community economic base and development of increased tourism. The total cost is expected to be \$3.8 million over two years. DREE will provide up to \$2 million, DIAND, \$460 000 and GNWT the balance.

More than 250 applications for assistance have been received under the Special Rural Development Agreement (Special ARDA) between Canada and the Northwest Territories, signed in 1977. This program provides financial and other assistance, particularly to Indians and Inuit, for development of employment opportunities and improvement of socio-economic circumstances. To date 148 Special ARDA projects have provided 127 jobs in commercial enterprises and assistance to 2 790 people under non-commercial aspects.

The Northwest Territories, an eligible region under the Regional Development Incentives Act (RDIA), received \$360 000 for nine projects involving total investments of \$1 250 000 and 78 jobs.

Plans for 1980-81

Work under the General Development Agreement will continue.

Yukon

Review 1979-80

Two agreements subsidiary to the General Development Agreement (GDA), signed between Canada and the Yukon in August, 1977, were finalized in 1979. The first, for Renewable Resource Development, provides \$6.6 million, including \$3.12 million from DREE, to expand the renewable resource information base and develop increased tourist and recreation facilities. The second subsidiary agreement provides \$6 million, including \$3.6 million from DREE, to further develop tourism throughout Yukon.

The Special Rural Development Agreement (Special ARDA) has now processed 118 applications and approved 37 which should produce 150 jobs in commercial enterprises.

Since June, 1978, the Regional Development Incentives Act (RDIA), has provided \$46 000 for two projects expected to involve total investment of approximately \$130 000 and six jobs.

Plans for 1980-81

Work under the General Development Agreement will continue. ■

Department of National Revenue

DNR



Pleasant Camp Customs Port on Haines Highway, enroute to Haines, Alaska.

Responsibilities

Customs controls the international movement of goods, persons and conveyances and collects duties and tax due on imports.

Review 1979-80

Yukon

The Port of Whitehorse administers and enforces Customs laws and regulations throughout Yukon. The territory is serviced by all modern transportation methods engaged in the import and export of goods and the international movement of passengers. To accommodate this traffic, Customs ports are maintained at Beaver Creek, Dawson, Little Gold (summer months only), Old Crow and Pleasant Camp. Customs formalities at Old Crow are performed by the RCMP. These outposts provided service at six locations approved as Customs airports of entry and for the highway sufferance warehouses at Whitehorse. Special arrangements were also made to accommodate river traffic leaving and re-entering Canada on the Yukon-Porcupine River route.

Northwest Territories

During 1979-80 Edmonton Customs maintained an outpost at Inuvik, staffed by a full-time Customs employee. Members of the RCMP at Frobisher Bay and at a number of other settlements continued to provide service under the guidance of Customs Headquarters. Service at these locations is, however, primarily restricted to inward passing and outward reporting Customs formalities.

During the year exploration activities, both of a commercial (the development of oil and mineral resources) and non-commercial nature (geographical, scientific and mountaineering expeditions) continued with increased intensity. These activities, requiring increased cargo deliveries, have required closer surveillance and monitoring by Customs to ensure compliance with reporting and accounting procedures. During this period an officer travelled from Ottawa on several occasions to examine these aspects.

There was a significant increase in the volume of imported and exported cargo during the 1979-80 season. The main shipping activity concerned the delivery of oil exploration and mining supplies as well as petroleum products to numerous locations in the territories, particularly the mining community of Nanisivik. Special arrangements were also developed and implemented to accommodate offshore drilling activities in the Beaufort Sea and Baffin Island areas. To ensure Customs requirements were observed, the cooperation of members of the RCMP and officials of other government departments proved invaluable.

Locations for Customs service in the Northwest Territories, other than the Inuvik location previously mentioned, are listed under the government department whose employees perform Customs duties.

Royal Canadian Mounted Police

Baker Lake	Nanisivik
Cambridge Bay	Pangnirtung
Clyde River	Pond Inlet
Coppermine	Resolute Bay
Eskimo Point	Sachs Harbour
Frobisher Bay	Spence Bay
Grise Fiord	Tuktoyaktuk
Lake Harbour	Yellowknife

Department of National Defence

Cape Dyer	Hall Beach
Cape Parry	

Department of Environment

Eureka	Mould Bay
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Plans for 1980-81

Due to increased commercial activity in the territories and the Arctic Archipelago, the adequacy of Customs control will continue to be examined and monitored to determine the requirements for Customs staffing, surveillance and service. ■

Royal Canadian Mounted Police

RCMP



Northwest Mounted Police Department Compound at Whitehorse in 1900.

M Division

Responsibilities

The RCMP "M" Division provides all policing in the Yukon. It preserves peace and maintains law and order through the Criminal Code, federal statutes, and territorial ordinances.

There are 92 regular members in the Yukon, seven special constables, 11 Indian special constables, seven civilian members and 16 public servants.

Review 1979-80

Modular detachments, installed at Beaver Creek and Carcross, were occupied by the end of March, 1980.

Double-wide quarters were installed at Pelly Crossing, Ross River and Faro.

The overall crime picture in Yukon showed a 1.5 per cent drop from the previous year.

There was a drop of more than 40 per cent in the number of drug offences and 32.2 per cent fewer offences against federal statutes. There were 2 345 crimes against property, a drop of 1.6 per cent, and 598 crimes against persons, an increase of 3.6 per cent.

The overall total showed 11 071 incidents compared to 11 248 in the previous year.

Increases in criminal activity may occur over the next five years during preparation and construction of the pipeline. Steps taken to prepare for this increase are upgrading of buildings and quarters and planning for additional manpower.

There are eight Indian special constables at various Yukon communities. Of the total, seven completed recruit field training and are providing back-up service to members at Beaver Creek, Carcross, Ross River, Teslin, Watson Lake and Whitehorse Detachments. One member will be posted to Mayo when training is completed. Another three candidates have been selected this year which will bring the strength up to 11 for 1980-81. The goal is to have 18 Indian special constables by 1983-84.

The Summer Student Program, in existence for three years in the Yukon, has been gratifying as the calibre and productivity of the students has been high.

Of the eight students employed last year, one became a regular member, one is employed full-time at Whitehorse Detachment as a public servant and two are prospective applicants. The Division has authority to engage seven students for the summer, 1980.

Plans for 1980-81

Detachment buildings at Dawson City and Watson Lake will be replaced with modular units. Detachment renovations have been scheduled for Haines Junction and Mayo. Funds have been allocated for an extension to quarters at Old Crow to accommodate a second married member. The program to have double-wide quarters at all outlying detachments will proceed.

As construction of the Alaska Highway Gas Pipeline draws nearer, the RCMP will prepare for greater traffic and population, by upgrading and replacing buildings and quarters and programming for additional manpower.



RCMP Detachment, Whitehorse, YT, 1943.

Rising world prices for gold and silver brought much activity to the gold fields and current demands on fossil fuels could result in construction of additional gas and oil pipelines across the North. These events could also affect manpower levels north of 60°.

G Division

Responsibilities

The Royal Canadian Mounted Police "G" Division provides policing services to the Northwest Territories. Under contract to the territorial government, "G" Division is a federal and territorial police force, with headquarters in Yellowknife. There are three sub-divisions, 36 detachments, and three "Air" detachments at Yellowknife, Inuvik, and Frobisher Bay, supplying support services.

Review 1979-80

Although the Northwest Territories continued to have the highest per capita crime rate in Canada, overall crime decreased by about four per cent during 1979. Crimes against persons increased by almost two per cent and crimes against property decreased by approximately three per cent during the year. Most of the serious crime was related to alcohol abuse.

Liquor plebiscites, held in 20 communities, resulted in either total prohibition or restrictive sale of alcohol. It is too early to determine the effects these efforts will have on the crime rate, but total liquor sales in the Northwest Territories dropped about two per cent from the previous year.

The Regular Patrol Service (RPS) to settlements without permanent detachments is working well. There are 63 settlements in the NWT and 27 settlements are served by RPS. Fourteen of the 27 settlements have police patrol cabin facilities.

Efforts continued in 1979-80 to recruit native people. Two special constables were posted to Lake Harbour and Rankin Inlet. Civilian members were engaged to fill existing vacant positions in Yellowknife Telecommunications Section.

Three Inuit special constables attended a 13-week training course at the RCMP Academy in Regina. Two of the graduates returned to their respective detachments at Spence Bay and Baker Lake while the third terminated his employment before completing training.

As of the end of 1979, there were seven vacancies for special constables in the central and eastern arctic.

Plans for 1980-81

The new Hay River Detachment building is to be completed by June 1, 1980.

New construction in the coming year is limited to a detachment building at Tuktoyaktuk and a patrol cabin at Nahanni Butte.

Major renovations for the new year include the entrance to the Henry Larsen Building, which houses Yellowknife Detachment, Yellowknife Sub-Division Headquarters, and "G" Division Headquarters in Yellowknife. ■



School visitation, Haines Junction, YT.

Department of the Secretary of State



Citizenship Sector

Responsibilities

The Citizenship Sector plans and administers programs to encourage the development of effective Canadian citizenship and coordinates the formulation and development of national strategies and policies affecting citizenship. The programs seek to promote effective citizen participation in all aspects of Canadian society, encourage both cultural awareness and diversity in a bilingual framework and preserve and reinforce human rights and freedoms.

Review 1979-80

The program for the Northwest Territories and Yukon was administered through the Department's Prairie and Pacific regional directorates.

Under the Native Citizens' Program, funding and support were provided to native associations, women's groups, friendship centres, social and cultural development projects, communications societies, film and video productions for remote communities. In addition, a new friendship centre was opened in Fort Simpson.

The Student Community Service Program helped organizations hire students for local projects.

The Official Language Minority Groups Program provided financial assistance to a francophone group in Yellowknife. The Multiculturalism Program provided assistance to multicultural community projects in the larger NWT centres. In Yukon, the Hostel Program assisted the Yukon Hostel Association operate hostels in four communities.

Plans for 1980-81

Through its Manitoba Regional Office, the department will support organizations and activities in northern development programs.

Language Programs Branch

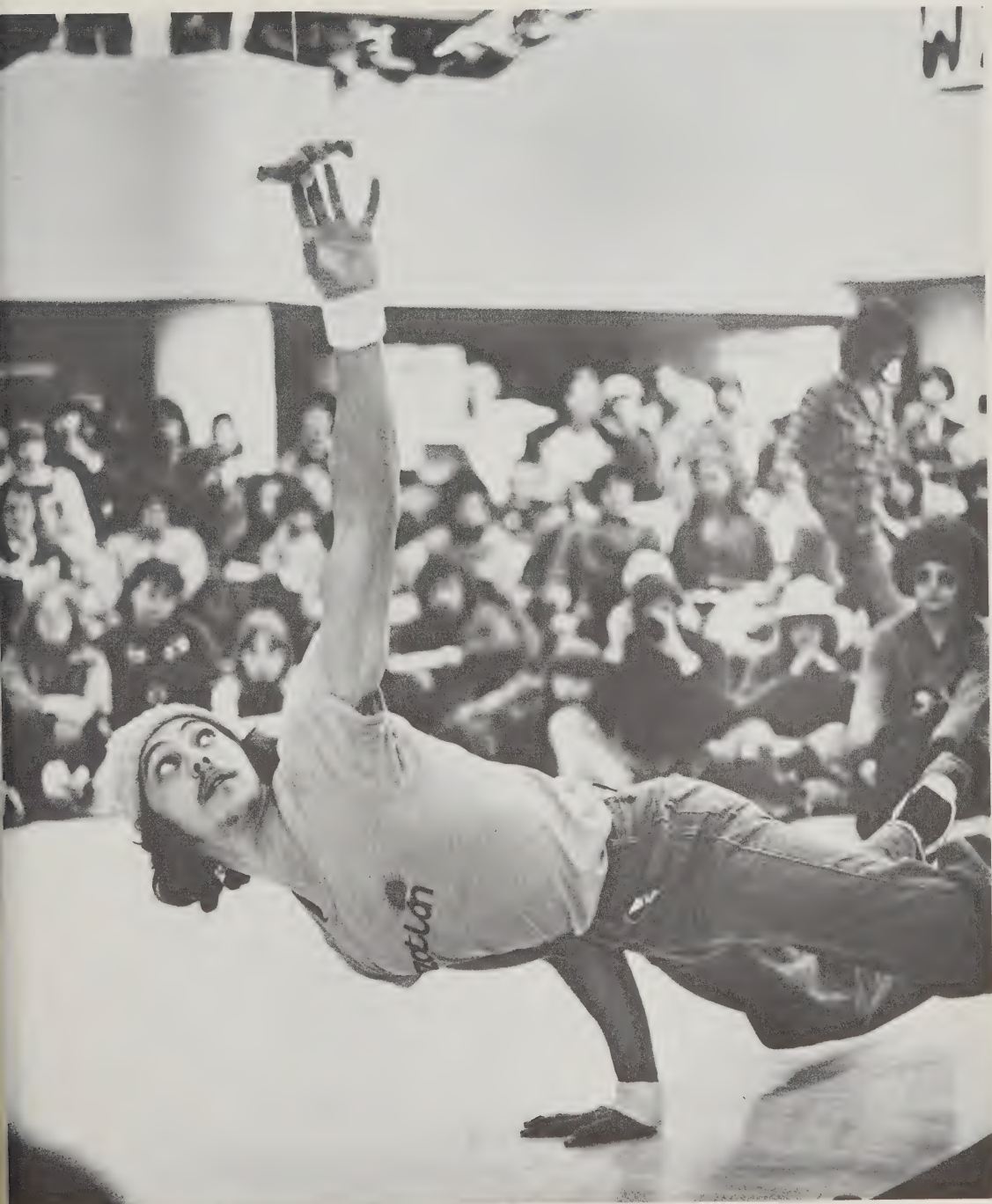
Responsibilities

The program provides better opportunities to acquire knowledge of the other official language. It also enables members of the official language minority in each province or territory to study in their mother tongue.

The program also helps provincial, territorial and municipal administrations develop the ability to serve the public in both official languages.

Review 1979-80

At the request of the two territorial governments, the branch renewed, for the sixth consecutive fiscal year, its assistance towards the official languages programs of each Department of Education. The maximum total allocation was \$200 000.



one hand reach

In the Northwest Territories funding made possible the hiring of a French language coordinator and:

- study fellowships were awarded to post-secondary students;
- full-time monitors received remuneration to assist French language teachers;
- text books and other resources were purchased for teaching French;
- in-service training for French language teachers was organized;
- bursaries were awarded to French language teachers.

In Yukon, federal assistance for French language programs helped to provide:

- the salary for a full-time coordinator of French courses;
- full-time French language monitors;
- bursaries for French language teacher training;
- support for the expansion of in-service training programs and career development programs for teachers;
- bursaries for post-secondary students to take part in summer immersion courses in an official language.

Assistance was also used to support a series of non-credit adult education immersion courses and a ten-day methods course for elementary teachers.

Although funding was no longer available, consultation services and technical aid regarding terminology, translation and second language training was available to territorial and municipal administrations.

Plans for 1980-81

The five-year agreement on Official Languages in Education expired in March, 1979, and interim arrangements were made for financial assistance to the territories as well as the provinces for 1979-80. Action is under way toward agreement on future assistance.

The department will continue to provide territorial and municipal governments with access to technical aid.

Fitness and Amateur Sport

Responsibility for Fitness and Amateur Sport was changed on two occasions during the fiscal year 1979-80. In June, 1979, responsibility moved from the Department of Health and Welfare to the Secretary of State. In March, 1980, it moved from Secretary of State to the Department of Labour.

Northern Games

The Northern Games bring together native people of Alaska, the Yukon and Northwest Territories for an annual summer celebration of traditional games, dances and skills. The Games are a festival with participation and enjoyment the key components. There are no age limits in the competitions and all native people become willing and vigorous participants.

In 1979, the Northern Games were held in Inuvik, Northwest Territories. The federal government, through its Fitness and Amateur Sport program, contributed financially.

Arctic Winter Games

Every two years, representatives of Alaska, the Yukon and Northwest Territories take part in the Arctic Winter Games, an international festival of sport and culture. These Games provide a common ground for the development of athletic and an interchange of cultural and social interests among people of the North.

Some 900 participants gathered in Whitehorse, Yukon, for the 1980 Games. The VIth Arctic Winter Games will be held in Fairbanks, Alaska, in 1982.

Native Sport and Recreation Program

This program was created to develop sport and recreation, and help raise the levels of performance in sport and recreation among Indians, Métis, Non-Status Indians and Inuit. ■

Department
of Transport

DOT



M.V. Arctic ice-breaking bulk carrier

Arctic Transportation Directorate

Responsibilities

The Arctic Transportation Directorate develops, promotes and coordinates plans and programs for transportation services and terminal facilities in the Yukon and Northwest Territories. This coordinating role not only involves planning and development with Transport Canada but includes consideration of the activities of federal government departments and agencies, the governments of the Yukon and Northwest Territories, industry and the public.

The directorate also develops and implements policies related to transportation in the arctic.

Review 1979-80

The policy for providing air transportation facilities and services in the Yukon and Northwest Territories still is being implemented. The training program for residents of remote communities to operate and maintain airports continues, with training given in airfield and vehicle maintenance, communications and meteorological services. A review of the implementation of this policy is being carried out in conjunction with the Canadian Air Transportation Administration (CATA).

The special user charge policy, developed for the smaller, more remote airports, is being implemented. Aviation weather requirements for the territories are being set out by CATA.

The Intermodal Transfer Study into the economics of resupply continues. All major airlines operating scheduled services in the Yukon and Northwest Territories have participated in a travel survey. The results will be published soon in a general report.

Work was renewed on the study of a dock facility at Frobisher Bay. This issue has remained unresolved for several years but an interdepartmental working group, coordinated by the Arctic Directorate, has been formed to bring the issue to a head. Consideration of a policy for providing marine facilities and services in the arctic began. This policy is being developed with the Canadian Marine Transportation Administration.

The resupply of Fort Franklin and the Northern Transportation Company Limited service to Great Bear Lake remained an issue throughout 1979-80. The directorate led the study carried out by an interdepartmental group into long-term options for resupply of Fort Franklin. The study report should resolve this long-standing problem.

The directorate, in conjunction with the Northern Pipeline Agency, is coordinating government approvals of the logistics and transportation plans for the Alaska Highway Gas Pipeline and the impacts the project will have on national and regional transportation systems.

Canadian Surface Transportation Administration

Surface Policy and Urban Transportation

Responsibilities

The branch manages the Urban Transportation Assistance Program (UTAP) which shares the cost of studies and capital works designed to improve the efficiency of urban transportation systems.

Review 1979-80

The branch approved funding for a major re-equipment of the Whitehorse transit system and for the acquisition of buses for Hay River and Frobisher Bay.

During 1979-80, the first four mini-buses for Whitehorse were delivered and tenders were called for two other projects.

Highway Transportation

Responsibilities

The Highway Branch negotiates and manages cost-shared highway programs and studies their interrelationship with other modes of transportation. The branch heads the Interdepartmental Highway Committee, which reviews proposed federal highway investments south of 60°, as well as the Interdepartmental Committee on International Bridges, which coordinates all policy questions pertaining to bridges linking Canada and the U.S.

Review 1979-80

The government's financial constraint program, initiated in 1978-79, led to the cancellation of some branch programs. This may be reflected in a proposed reorganization of the department's highway administration in 1980-81 but the branch's ongoing advisory services will not be affected.

Motor Carrier Branch

Responsibilities

The Motor Carrier Branch develops federal policies affecting the motor carrier industry and participates in strategic planning of passenger or freight movement on Canada's highways.

Review 1979-80

The branch maintained close contact with provincial counterparts through membership in the Canadian Conference of Motor Transport Administrators. This organization works toward uniformity in Canadian motor carrier regulations. All provinces and territories are members.

The Canadian Surface Transportation Administration

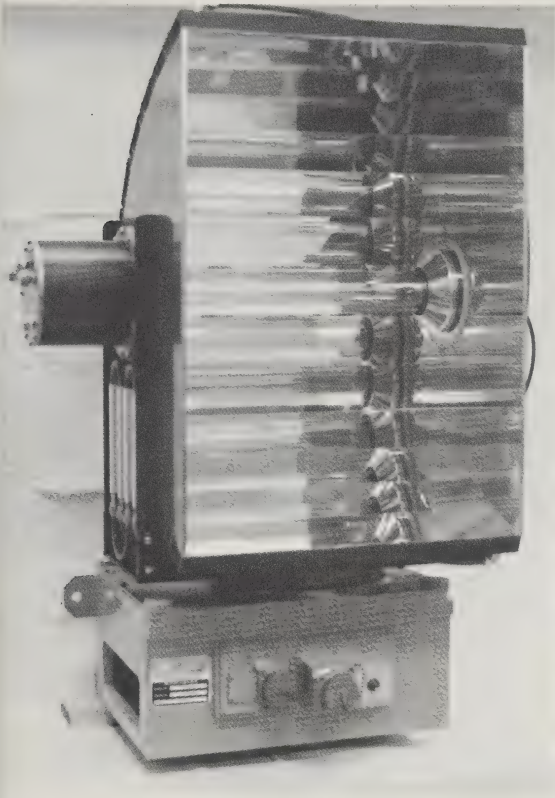
Railway Transportation

Responsibilities

The Railway Transportation Directorate formulates policy proposals and ensures that the operation, planning and regulation of railways meet national needs and government policy. It also plans and implements railway programs consistent with such objectives, provides the government with railway information, conducts liaison with industry and provincial governments, and ensures that adequate resources are available for the continued improvement of the railway system.

Review 1979-80

The interdepartmental committee charged with formulating a railway development strategy for the Yukon completed the required research and will report to the Minister of Transport in 1980.



Plasma high intensity light source



. . . . mounted on CCGS Norman McLeod Rogers.

Water Transportation Assistance Directorate

Responsibilities

The Water Transportation Assistance Directorate (WTAD) subsidizes essential water transport services where full cost recovery rates are impractical.

Review 1979-80

WTAD's main arctic activity is subsidization of the Northern Transportation Company Limited (NTCL) barge services from Churchill to the Keewatin ports and on Great Bear Lake. In 1979-80, the subsidy for the Keewatin service was \$500 000 and for the Great Bear Lake service, \$300 000.

Plans for 1980-81

In 1980-81, the WTAD will continue its subsidy program in the Keewatin. However, the responsibility for subsidizing the Great Bear Lake service has been transferred to the Department of Indian Affairs and Northern Development.

Canadian Marine Transportation Administration

Responsibilities

The Canadian Marine Transportation Administration (CMTA) ensures the efficient and safe development and operation of the national marine transportation system. The administration comprises the Canadian Coast Guard, National Harbours Board, St. Lawrence Seaway Authority and the Atlantic, Laurentian, Great Lakes and Pacific Pilotage Authorities.

In the arctic, the administration provides facilities and services for commercial and resupply shipping.

Canadian Coast Guard

Responsibilities

The Canadian Coast Guard coordinates the delivery of cargo for the Canadian government, USAAF, and Canadian commercial interests. It provides ice and routing information and icebreaker support. It carries out environmental research and surveys, installs, operates and maintains aids to marine navigation, carries out search and rescue operations and administers the Navigable Waters Protection and Arctic Waters Pollution Prevention Acts.

Review 1979-80

The Canadian Coast Guard coordinated and conducted the annual resupply in the eastern arctic, assisting ships with delivery of fuel and other commodities and equipment to isolated bases, communities and defence radar sites. It also provided ice routing and icebreaker escort for commercial shipping, particularly on the Hudson Bay grain route to Churchill, Manitoba, and for ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Rae Point and Eureka. Seven Coast Guard icebreakers were deployed for this year's resupply operation and specialized projects.

CCGS J.E. Bernier was involved in an extensive construction program of navigational aids in Resolute Bay, Payne Bay and Frobisher Bay. Other Coast Guard vessels were involved in hydrographic and oceanographic surveys when their primary responsibility of supporting commercial shipping permitted. Because of the severity of the ice conditions, a significant number of planned hydrographic projects had to be cancelled.

In late August, CCGS John A. Macdonald, which had been chartered to Dome Petroleum Co. Ltd. for one year to provide icebreaker assistance to the company's drilling fleet in the Beaufort Sea, was released from her charter and left Tuktoyaktuk for Resolute Bay. In early September, after completing a survey at Resolute, the vessel proceeded to Dartmouth, N.S.

CCGS Franklin sailed its maiden voyage from Victoria, B.C., on July 8 to provide icebreaker support and take part in the annual resupply activities of the western arctic. The icebreaker was assigned temporarily to the western arctic operation to replace CCGS Cam-sell, which had sustained considerable ice damage in the summer of 1978. The Franklin sustained severe damage to her port propeller in heavy ice in Viscount Melville Sound while transiting the Northwest Passage en route to St. John's, Nfld. The vessel became beset and CCGS Louis S. St. Laurent, the Coast Guard's most powerful icebreaker, was deployed from east Lancaster Sound to assist. Due to the extremely adverse ice conditions, lateness of the season, and the Franklin's much reduced capability, the voyage eastward was abandoned and both icebreakers proceeded west. The Franklin arrived back at Victoria in mid-October for dry-docking and fitting of a new port propeller. The two vessels sailed to their east coast bases through the Panama Canal, the Louis S. St. Laurent arriving at Dartmouth on November 16 and the Franklin arriving at St. John's on December 10.

Besides Canadian Coast Guard vessels, some 76 commercial vessels, including supply tugs, tankers, cargo and research vessels, proceeded into Canadian arctic waters during the summer. Of these, 51 required icebreaker assistance, including the M/V Arctic, which made several trips to Nanisivik in Strathcona Sound to load zinc concentrates for Europe. On her first trip in late July the vessel was escorted by the Louis S. St. Laurent while on her last voyage, in early October, the Pierre Radisson provided escort. The Arctic made another voyage to Churchill in mid-November to load barley for Poland. On that occasion it was assisted by the Pierre Radisson.

Both vessels left Churchill November 17. The Pierre Radisson cleared the Strait on November 21 after deactivating the aids to navigation. It was the first time in the history of the Port of Churchill that a cargo vessel, assisted by a Coast guard icebreaker, loaded so late in the season.

Eastern arctic resupply operations were conducted using three commercial dry cargo carriers operating 11 vessels and one bulk fuel carrier operating five vessels. Fifty points of delivery, including civil settlements, DEW line and scientific sites in Canada and Greenland were supplied with a total of 10 050 tonnes of dry cargo and 50 257 tonnes of petroleum, oil and lubricants. A further 69 tonnes of cargo were transported between arctic sites and 460 tonnes sent back south to Montreal and Ogdensburg, N.Y.

The NORDREG/ECAREG Vessel Traffic Management System and the Frobisher Bay Ice Office monitored operations and tracked shipping movements, providing ice information, ice routing services and allocating icebreaker support.

During the season, 145 vessels used the Arctic Canada Traffic Zone. Six vessels sustained damage, four were defective, while four lacked charts and publications.

Arctic-related research and development continued to receive high priority. Treasury Board approved the nuclear icebreaker design project. Other projects included the air cushion icebreaking bow attachment aimed at enhancing icebreaker capability; the development of ice buoys, ice force measuring and observation of ice movement.

CMTA administers certain public port facilities north of 60° particularly along the Mackenzie River system and in small coastal communities from the Amundsen Gulf to Ross Strait in the western arctic. These facilities are in addition to those provided by the private sector. Facilities in the western arctic are generally shallow draft suited to barge traffic originating on the Mackenzie River system. There were no major changes to these facilities in 1979 and no major changes are planned in 1980.

In the eastern arctic, public port facilities are limited to Nanisivik, in Strathcona Sound on Northwestern Baffin Island. Last year marked the second full season of operation for the facility of three large-diameter steel sheet pile cells with concrete caps and gravel cargo-working areas. A shiploader and conveyor system was provided by Nanisivik Mines Ltd. for loading mineral products. The facility can be used by vessels of up to about 50 000 tonnes dead-weight.

Canadian Air Transportation Administration

Responsibilities

The Canadian Air Transportation Administration (CATA) develops a safe and efficient national Civil Air Transportation system. CATA operates specific elements of the system, including airports, air traffic control facilities and services, domestic and international airways - air routes. The administration plans northern air transportation, in coordination with the Arctic Transportation Directorate, and funds and implements approved projects.

CATA has a headquarters organization responsible for national direction and formulation of policies, standards and regulations. It also has six regional offices. Three of these regional offices, Québec, Central and Western, have responsibilities in northern Canada.

Arctic Air Transportation Facilities Policy

The Arctic Air Transportation Facilities Policy, approved in 1974, specifies criteria and standards for Arctic airports, classified as category A, B or C, depending on their characteristics. Arctic A airports are major airports owned and operated by Transport Canada, directly or under contract. They serve larger communities and have scheduled jet aircraft operations. Arctic B and C airports, many of which are not operated by Transport Canada, primarily serve the needs of smaller communities.

Of the 62 airports currently involved in the Arctic Air Facilities Program, 11 are classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports generally have been for new or replacement facilities and equipment. Total capital expenditures to the end of 1979-80 were estimated at \$23 million. The financial ceiling, approved in 1977, is \$56 million. For B and C airports, the current approved capital expenditure level for completing the program is \$81 million. At the end of the fiscal year 1979-80, it was estimated \$36 million had been spent. By March 31, 1980, 42 B and C airports met Transport Canada licensing standards compared with 25 when the program began. Major airport development work still has to be initiated at 18 designated sites.

A major review of the Arctic Air Facilities Policy was initiated by CATA and the Arctic Transportation Directorate to determine the direction the program should take when the current mandate expires in 1982-83. The review will evaluate the effectiveness of the current policy in meeting government objectives for transportation in the arctic. It will examine such issues as:

- classification of communities
- the criteria for new sites
- continued inclusion of Transport Canada's Arctic A airport and en route navigational aids
- appropriate runway lengths for Arctic C airports
- the potential for transferring responsibility for implementing various elements of the policy to the territorial governments.

A report will be issued by the end of 1980. Any new policy direction will take into consideration the current economic climate and the aspirations of the territorial governments for greater autonomy.

Civil Aeronautics

Responsibilities

In the arctic, as elsewhere in Canada, the Civil Aeronautics Directorate is responsible for the regulatory and air navigation services activities.

Air navigation services includes designating airways - air routes; determining associated facilities and developing related standards; inspecting and calibrating navigational aids; inspecting runways and manoeuvring areas; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing air traffic control for Canada and the international airspace for which Canada has responsibility; and funding the meteorological services required to support aeronautics.

Regulatory services include developing and enforcing aeronautics legislation, standards and procedures; inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft; surveillance of aircraft manufacture and repair; and investigating aircraft accidents.

Review 1979-80

Licensing and Inspection

The Civil Aviation inspection program covered most commercial bases in the arctic during the year. Pilot examinations and flight tests were conducted as required. As of December 31, 1979, there were 518 valid licence and permit holders in Yukon and 593 in the Northwest Territories.

A Grumman G-11 (DC-CFB), operating from Ottawa, carried out flight inspection of navigation and landing aids north of 60° where distances tax the capabilities of smaller inspection aircraft. During 1980, this aircraft will begin gathering Omega information.

Air Traffic Services

Air Traffic Services (ATS) continued to provide control services for flights operating under the Instrument Flight Rules (IFR) in the North.

The high-level airspace in Canada has been divided into three general air traffic control areas: Arctic, Northern and Southern. Control services were provided to all flights operating within these areas using the Arctic Track System and the Northern Track System together with the domestic high-level airway structure. In the low-level airspace, control was provided to IFR flights operating along designated airways and within control area extensions.

North of 60°, these control area extensions and their nautical mile radii are: Fort Smith, 50; Hay River, 50; Norman Wells, 50; Yellowknife, 50; Frobisher, 40; Inuvik, 40; Whitehorse, 40; Fort Simpson, 25; Teslin, 25; and Watson Lake, 25.

Control Zones provided additional protection and improved service to the operators at: Fort Simpson, 5 NM Radius; Frobisher, 5; Norman Wells, 5; Watson Lake, 5; Fort Smith, 10; and Hay River, 10. Positive Control Zones with established Transport Canada control towers were located at Inuvik, Whitehorse and Yellowknife, all with 5 NM radii.

Aerodrome Traffic Zones provide additional protection for aircraft operating at uncontrolled airports. These zones of 5 NM Radius were located at Baker Lake, Cambridge Bay, Coral Harbour, Eskimo Point, Eureka, Fort Resolution, Hall Beach, Grise Fiord, Nanisivik, Rankin Inlet, Resolute and Wrigley.

In addition, ATS continued to provide information and supplementary services for aircraft operating north of 60°.

To support these activities, Air Traffic Services operates a discrete telephone circuit from the Edmonton Area Control Centre (ACC) to Cambridge Bay, NWT, with switching arrangements to the Reykjavik ACC in Iceland, and to the Anchorage Air Route Traffic Control Centre, Alaska. However, this circuit was subject to frequent extensive interruptions which made liaison between ACCs unreliable. To provide Edmonton with a more reliable means of contacting the Reykjavik ACC, the United North Atlantic Radio Navigation (LIM-NAT-RAN) meeting of January, 1979, recommended that the omnibus circuit serving Edmonton, Frobisher Bay, Moncton and Gander be extended to Fort Chimo, Québec, for Moncton ACC domestic en route flight coordination.

Since increased message traffic caused overloading on the single satellite-derived Automated Data Interchange System (ADIS) circuit serving far northern sites, two circuits were provided. One now serves Resolute Bay, Baker Lake and Coral Harbour, while the other ties in Frobisher Bay, Fort Chimo, Inoucoujouac and Poste de la Baleine.

Telecommunications and Electronics

During 1979-80, the Flight Service Station (FSS) at Ennadai Lake was decommissioned as were HF frequency 5 680 kHz Fort Good Hope and VHF frequency 122.1 MHz (receive only) at all FSS locations.

The scheduled weather broadcast service at all FSS stations in the North was withdrawn except for Cambridge Bay, Frobisher, Inuvik, Resolute and Yellowknife, where the broadcast was changed to once an hour at H-30.

The air/ground VHF frequency 122.4 MHz was changed to 122.1 MHz at Cape Dorset, Eskimo Point, Pangnirtung, Pond Inlet, Rankin Inlet, Repulse Bay, Sanikiluaq and Whale Cove.

In support of Canada's commitment to ICAO, two new 5kW HF transmitters and a remote control system have been supplied to Frobisher Bay and modifications to improve performance and reliability have been carried out on HF transmitters at Cambridge Bay and Churchill.

Aeronautical communications equipment was installed at Igloolik and Nanisivik, NWT, and Old Crow, YT.

Canadian-designed and built ground equipment has been installed at Anchorage and Dead Horse, Alaska, for the joint Transport Canada-FAA differential Omega trial. Flight trials by the FAA have begun. The third ground system will be installed at Inuvik in the spring, 1980.

An automated Loran C monitor will be installed at Inuvik in May, 1980, and data collected on Loran C transmitter TOC in Alaska during the next 12 months to record phase stability and signal level variations.

Aviation Safety

Federal government departments which send their employees north on either a temporary or permanent basis are conducting regular training programs. This training emphasizes survival if lost or involved in the forced landing or crash of an aircraft. The Aviation Safety Bureau maintains an advisory service for these programs, which includes the participation of the regional aviation safety officer. Emphasis continues to be placed on compliance by commercial operators with Air Navigation Order Series V, No. 12, Sparsely Settled Areas Orders, which include a list of survival equipment requirements.

The bureau maintains an active liaison with the Canadian Armed Forces Search and Rescue Organization and responds to safety recommendations made by this group.

Airports and Construction Services Directorate

Responsibilities

The Airports and Construction Services Directorate provides, maintains and operates the National Airports System, and plans, designs, constructs and maintains all airport facilities (except equipment for non-visual aids to navigation air traffic services). The directorate plans and coordinates all activities related to airport operations, levels of service, services and facilities. This includes developing policies and guidelines for the operation and security of airports; developing policies and standards for the planning, design, construction and maintenance of airport facilities; providing financial and advisory assistance to community airports; and engineering and architectural support to off-airport CATA installations.

The directorate also is responsible for major construction and design of projects undertaken by regional administrators as well as for purchase of such items as runway sweepers, snow blowers and AES vehicles.

The development of training programs, policies and standards is carried out in conjunction with other government departments and agencies. The Airports and Construction Services branches in the six regional offices implement projects and look after day-to-day operations of the arctic airports.

Québec Region

There are one Arctic A (Frobisher Bay) and seven Arctic B and C airports in Québec Region. Broughton Island was to have been completed during the fiscal year but spending restraints caused the construction project to be deferred to 1980-81.

Master plans have been completed for each airport and will be used for planning future airport developments. A report on the total land requirement for each airport has been forwarded to the Government of the Northwest Territories. Legal land surveys by the Department of Public Works will begin next year for Lake Harbour, Broughton Island and Cape Dorset.

This was the first winter that Transport Canada has contracted the operation and maintenance of Frobisher Bay Airport to a private firm. Judging by the first year's operation, this initiative has been successful. During February, the worst blizzard in the history of that community occurred. It lasted 12 days and resulted in snowbanks of up to 400 cm. Although there was no activity during the blizzard, flights were able to land the day after in spite of the enormous accumulation of snow.

Review 1979-80

Lake Harbour The runway was extended by 91 m to its maximum of 584 m including overruns. A building to house the NDB was constructed.

Broughton Island A building to house the NDB was completed.

Clyde River Improvements to the existing runway were finished. The maintenance garage is being constructed and should be ready for occupancy soon. The aircraft refuelling kit was completed and turned over to the community. The HF transmitters used by Atmospheric Environment Services have been replaced by newer equipment.

Pond Inlet This airport was turned over to Transport Canada by DND at the end of the 1978 construction season. Only a few weeks of work were needed to complete the access road and taxiway. Québec Region undertook to complete the project.

Frobisher Bay A VOT was scheduled for installation before the end of the year but there were delivery delays in the electronics equipment. The project for the protection and improvement of the transmitter site was completed.

Plans for 1980-81

Lake Harbour Install and commission an NDB.

Broughton Island Install and commission an NDB; move the apron and taxiway to the village side of the runway; install an aircraft refuelling kit, VHF air/ground communications equipment and meteorological equipment; select an observer/communicator and a maintainer for training in air/ground communications procedures and airfield maintenance.

Frobisher Bay Replace two HF, 5 kW transmitters on ICAO frequencies; refurbish one of the beacon transmitters and increase its output power; replace various airport maintenance equipment.

Central Region

Central Region has one Arctic A (Resolute Bay) and 14 Arctic B and C airports. Airport runways and development of the associated facilities have been completed or are essentially complete at Rankin Inlet, Eskimo Point, Chesterfield Inlet and Spence Bay. The airport at Whale Cove is under construction but work at Repulse Bay, Igloolik, Nanisivik, and Grise Fiord has been delayed due to the 1979-80 restraint program. Runway development at other sites such as Hall Beach, Baker Lake, and Pelly Bay should be completed by 1984-85.

The Arctic B and C airports will have runways approximately 915 m long, except for: Baker Lake, 1280 m; Eskimo Point, 1219 m; Grise Fiord, 610 m; Hall Beach, 1524 m; Nanisivik, 1951 m; and Rankin Inlet, 1024 m.

At present, nine Central Region B and C airports have graduates of the Northern Observer-Communicator training program, and nine sites have trained airport maintainers.

Review 1979-80

Baker Lake The field electrical centre was relocated to the maintenance garage and improvements to the existing sewage system were begun. The VHF Direction Finder (DF) was installed and commissioned.

Chesterfield Inlet Airport lighting and the visual approach slope indicator system (VASIS) were installed this year and the remaining work on runway, apron, and taxiway was completed.

Coral Harbour The heated storage garage was completed. Materials were purchased for VASIS installations at both ends of the runway and for high intensity approach lighting.

Gjoa Haven Design work on runway, apron and taxiway development began.

Grise Fiord Some construction equipment was purchased for runway, apron and taxiway development.

Hall Beach Materials for the maintenance garage were purchased and construction of the refueller garage began.

Igloolik Deficiencies in the passenger-cargo shelter erected in 1978-79 were corrected.

Nanisivik Runway development and associated earthwork were suspended temporarily due to administrative problems.

Rankin Inlet Installation of the aviation fuel dispensing units and storage tanks continued.

Repulse Bay The runway, apron, and taxiway development was completed, but the VASIS installation was suspended.

Spence Bay The runway, apron and taxiway development was completed by DND.

Whale Cove Construction continued on the 915 m by 30 m runway, the apron and taxiway. The airport access road was virtually completed.

Plans for 1980-81

Baker Lake Complete improvements to the existing sewage system and expand the aircraft parking area.

Chesterfield Inlet Decommission the existing Flight Services Station when the Rankin Inlet Flight Services Station is finished.

Coral Harbour Purchase materials for installation of the VASIS at both ends of the runway and for the medium intensity lighting.

Gjoa Haven Ship equipment from Spence Bay for construction of a 915 m by 30 m runway and associated earthworks which will begin in 1981-82.

Grise Fiord Complete runway, apron and taxiway development.

Hall Beach Erect a maintenance garage.

Igloodik Complete runway, apron and taxiway development.

Nanisivik Extend runway from 1524 m to 1951 m.

Rankin Inlet Finish installing the aviation fuel dispensing unit together with tanks; purchase gravel crushing equipment for resurfacing and strengthening the runway; start work on a Flight Services Station and VOR/DME as well as a VHF/DF.

Repulse Bay Purchase material for construction of a terminal-operations building; complete runway, apron, and taxiway development; start the work for the installation of an airport lighting package.

Resolute Bay Begin work on a DME for the glide path.

Spence Bay Purchase material for construction of a terminal-operations building; install a medium-intensity lighting package and appropriate meteorological facilities.

Whale Cove Purchase material for medium intensity lighting and VASIS; finish upgrading the runway, taxiway, and apron.

Western Region

Nine Arctic A and 30 Arctic B and C airports are in Western Region. Through the Arctic Airports Facilities Program, the existing airports at Old Crow, Dawson and Mayo, YT, and at Coppermine, NWT, have been upgraded and new airports developed at Faro, YT, and Fort McPherson and Holman, NWT. These, together with the airports at Wrigley and Fort Resolution, NWT, which CATA previously owned and operated, have been turned over to the territorial governments. Work is under way at Aklavik, Sachs Harbour and Fort Norman, NWT. By the end of 1980-81, Aklavik and Sachs Harbour should be completed and turned over to the GNWT.

Delegating to control towers the responsibility for approval of special VFR flights has succeeded in expediting light aircraft movements under less than VFR weather conditions. These procedures are being refined for helicopter operations to further minimize delays during bad weather. The commissioning of the DME facility at Inuvik in October, 1979, has assisted in controlling IFR traffic and providing flight advisory services. Reduced IFR traffic levels have permitted decommissioning of both the Caribou and Noel outer beacons.

An Airworthiness Inspection District Office was established in Yellowknife. Two airworthiness inspectors will be based at the office to work throughout the arctic.

The Northwest Staging Route Area Aviation Master Plan, a long range plan for aviation facilities and services from northwestern Alberta through northeastern B.C. and the Yukon Territory, has been approved. Briefings have been held at communities along the route.

The region has continued to staff arctic airports with local observer-communicators and maintenance staff. Seven airports are staffed and operational, including Faro and Old Crow, YT, and Aklavik, Holman, Wrigley, Fort Resolution and Fort McPherson, NWT. These facilities represent 25 per cent of the total program planned for arctic communities in Western Region. In addition, responsibility for Fort Good Hope will be transferred to GNWT effective April 1, 1980.

Review 1979-80

Aklavik Fill construction, gravel runway surfacing, and a temporary runway lighting kit installation were completed. The site construction for a new NDB has been virtually completed and the NDB is scheduled for commissioning by the spring, 1980.

Faro A VASIS was installed.

Fort Good Hope The Flight Service Station was decommissioned and an Arctic C communications package installed.

Fort Norman Airport development started, including improvements to the access road. Additional clearing to improve zoning was completed.

Fort Smith The airport access road and carpark were rebuilt and the taxiway between aprons one and two partially paved.

Holman Island Improvements to correct deficiencies at the passenger-cargo shelter were completed.

Old Crow The passenger-cargo shelter was completed and permanent meteorological facilities were installed.

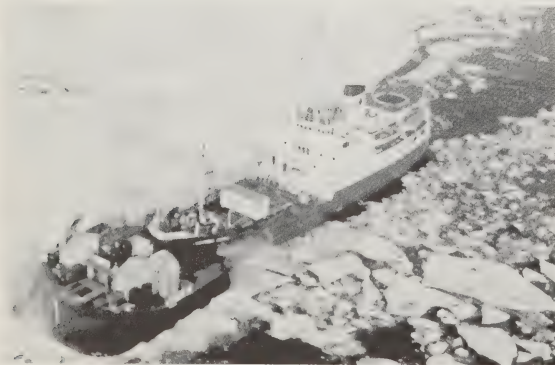
Paulatuk The temporary meteorological observation facility was installed.

Sachs Harbour The passenger-cargo shelter was completed and other airport improvements were begun.

Tuktoyaktuk Runway improvements were completed and permanent runway lights and a VASIS installed.

Watson Lake Site construction work began for an instrument landing system (ILS), a runway visual range (RVR) and a DME.

Whitehorse Water and sewer lines were replaced and repairs to the apron were completed.



CCGS *Alexander Henry* fitted with air cushion ice-breaking bow

Plans for 1980-81

Aklavik Complete runway development, taxiway, apron and associated earthworks development; install permanent runway lighting, a safety fence and a new NDB.

Burwash Install a refuelling unit and purchase runway and taxiway lighting kits.

Cambridge Bay Improve gravel surface runway; complete design work to repair the roofs of a number of buildings.

Coppermine Install a vehicle ground advisory service.

Dawson Install a vehicle ground advisory service.

Faro Install a permanent field lighting facility.

Fort Liard Start runway, taxiway, apron and access road development.

Fort Norman Improve the access road and provide electrical power; purchase materials for construction of a passenger-cargo shelter.

Fort Smith Pave the airport access road and the carpark; finish paving the taxiway between aprons one and two; renovate the operations building.

Hay River Do major repairs to runway 12-30.

Inuvik Renovate the ATB and the water supply system.

Mayo Install two lighted wind indicators and a rotating beacon; re-surface the runway and upgrade the taxiway and apron; complete design of the VASIS system and install a vehicle ground advisory service.

Old Crow Install a lighted wind indicator and a rotating beacon.

Ross River Install a refuelling unit.

Sachs Harbour Undertake runway development and install a refuelling unit, VHF and HF communications equipment.

Teslin Relocate the NDB on the airport property.

Tuktoyaktuk Finish final levelling of the runway, taxiway and apron; install a vehicle ground advisory service.

Watson Lake Complete the site construction for the ILS, RVR and DME; install the electronics equipment.

Whitehorse Start design work for the future ATB; replace the ILS equipment for runway 31 with solid state components; install a medium intensity lighting kit on taxiway E.

Transport Canada Research and Development Centre

Responsibilities

The Transport Canada Research and Development Centre (TDC) identifies, promotes and manages the application of science and technology to transportation. TDC provides research and development support to components of Transport Canada which require specific data to assist their operational, regulatory, policy planning and evaluation activities. It also undertakes research and development that is long range and national in scope. TDC has a number of arctic-related R&D projects, primarily in marine transportation.

Review 1979-80

TDC's arctic-related R&D was directed to icebreaking as well as to arctic vessels and equipment. This included such activities as trials using an air cushion icebreaking bow fitted to CCGS Alexander Henry; the development of a combined synthetic pulse-impulse radar for remote sensing of sea ice thickness; ice-hull friction measurements; and a 60 kW high intensity plasma light to facilitate icebreaking in darkness. This equipment was tested on CCGS Norman McLeod Rogers.

TDC managed the instrumentation program for the icebreaking cargo ship MV Arctic; reviewed standards for ice-class propellers and shafts, and evaluated propeller protection techniques. ■

Veterans Affairs Canada

DVA

Responsibilities

Veterans Services of the Department of Veterans Affairs provides health care, financial assistance and counselling to eligible veterans and their dependants. In addition, benefits are provided for certain civilians who served in close support of the armed forces during wartime. The program has no district offices in the Yukon or Northwest Territories because of the small number of actual and potential clients. Counsellors visit Yukon from the Prince George District Office and the Northwest Territories from the Edmonton District Office.

The Canadian Pension Commission ensures that benefits available under the Veterans Pension Legislation are extended to all eligible veterans and their dependants. Services include counselling, assistance with applications for benefits available under the pension legislation, and medical examinations for assessment purposes. The Vancouver and Edmonton District Offices provide clients in Yukon and the NWT with services identical to those available elsewhere in Canada.

Pension applicants in Yukon and the District of Mackenzie, NWT obtain free legal assistance from the Bureau of Pensions Advocates through the District Office in Edmonton. Veterans in other parts of the Northwest Territories are served through the Winnipeg District Office. However, applicants in the Yukon or NWT may deal with any district office.

If an appeal is heard by an Entitlement Board the Canadian Pension Commission will pay travel expenses of the applicant and his witnesses to the place of hearing.

Review 1979-80

At March 31, 1980, pensions awarded for disability or death attributable to service were being paid to 43 recipients in the Northwest Territories and 77 in the Yukon. There were 16 recipients of War Veterans Allowances or Civilian War Allowances in the Northwest Territories and 54 in Yukon. ■



Fur garment making at Baker Lake.

Government of the Northwest Territories

GNWT

Responsibilities

The Northwest Territories government exercises jurisdiction within the Northwest Territories, exclusive of control over natural resources (except game which is a territorial resource).

Legislative Assembly of the NWT

The term of the Eighth Legislative Assembly of the Northwest Territories expired March 31, 1979.

The assembly focused its efforts on evolution to responsible government and attainment of provincial status for NWT.

In April, Parliament recognized the assembly's demand for improved representation by amending the NWT Act to allow the commissioner in council to set the number of members at no less than 15 and no more than 25. An election for 22 members was held October 1, 1979.

As its last act, the Eighth Assembly prepared a paper on constitutional development. This paper detailed the practical ingredients of responsible government and the steps needed to achieve that goal as seen by the assembly.

In his opening address Commissioner Hodgson urged the House never to relax its struggle for full self-government. The NWT, he said, had come a long way but had even further to go. The key to success involved three principles: coordination, communication and cooperation.

He listed priorities for the assembly and administration as: constitutional development and land claims, economic development and employment, and cultural and local responsibilities.

The following are some of the new ordinances which were enacted:

- Appropriation Ordinance, 1979-80: To provide \$294 million to cover the expenses of the public service of the Northwest Territories for the 12 months ending March 31, 1980.
 - All-Terrain Vehicles Ordinance: To identify certain vehicles as all-terrain vehicles; to make certain general rules applicable to them; and to enable municipalities and settlements to regulate their use.
 - Firearms Control Agreements Ordinance: To enable the commissioner to enter into agreements with the federal government dealing with payment of costs of administering provisions of the Criminal Code relating to firearms control.
 - Legal Services Ordinance: To provide legal aid and other legal services to persons not able or not fully able to afford the services themselves.
 - Student Grants and Bursaries Ordinance: To provide grants and bursaries for certain students to attend post-secondary school.
 - Institute of Chartered Accountants Ordinance: To provide an institute of chartered accountants and enable it to regulate professional conduct.
 - Certified General Accountants' Association Ordinance: To provide a certified general accountants' association and enable it to regulate professional conduct.
 - Western Canada Lottery Ordinance: To provide authority for the Northwest Territories to participate in the western Canada lottery.
- Among the amendment ordinances enacted were:
- Ordinance to Amend the Municipal Ordinance: To equate the system for electing mayors of hamlets with the system for electing mayors of cities, towns and villages.
 - Ordinance to Amend the Interpretation and Certain Other Ordinances: To amend the Interpretation Ordinance to include all-embracing definition of Executive Member and to empower the commissioner to perform any of the statutory powers and duties of an executive member.



The Legislative Assembly of the NWT at its meeting in Yellowknife, February, 1980.
The new 22-member Assembly was elected October 1, 1979.

- Ordinance to Amend the Council Ordinance: To make legislative provision for the Executive Committee and appointment of executive members and to amend rates and systems for remuneration and reimbursement for expenditures to council members.
- Area Development (Amendment Ordinance): To limit the size of a development area.

The Hon. C.M. Drury, special representative on constitutional development for the Prime Minister, appeared before the House to present his preliminary reactions to the legislature's paper on constitutional development.

He agreed in general with the paper and urged the legislature and the administration to work closely with the federal government on the devolution proposals and develop a process for participation by local government and the native associations.

In his final message to the assembly, Commissioner Hodgson said the way was clear to work out a common approach that would benefit and integrate the people of the North into a program of participation.

Territorial General Elections

October 1, 1979, was election day as Members of the Ninth Legislative Assembly of the Northwest Territories were selected.

Membership of the assembly increased from 15 to 22 and, for the first time, territorial elections were conducted under a Territorial Elections Ordinance instead of the Canada Elections Act. The Ordinance, based on the Canada Elections Act, has been simplified and adapted to problems of the North.

One standard enumeration procedure was applied to both urban and rural areas and the time available for carrying out enumeration and printing of ballots was increased. The minimum population of communities eligible for automatic advance polls was reduced from 1 000 to 500. Provision was made for large placards (similar to a blown-up ballot) to be posted in each polling station showing candidates' photographs, names, addresses and occupations.

Provision was made for use of native languages on the ballot, public notices and forms to be completed by electors.

Returning officers travelled within their electoral districts and, when necessary, delegated to their election clerks the power to receive the nominations and appoint additional election clerks to receive nominations.

First Session: Ninth Assembly

The first session of the Ninth Legislative Assembly of the NWT opened November 13, 1979. The members were sworn in by Commissioner John H. Parker earlier in the day.

Robert H. MacQuarrie, member for Yellowknife Centre, was elected Speaker. The assembly appointed Kane Tologanak of the Central Arctic riding as Deputy Speaker and chairman of committees of the whole.

In his opening address Commissioner Parker said his role was to facilitate change, assist in transfer of power from appointed officials to elected representatives and help the people of the territories to achieve responsible government. He pledged his efforts and the cooperation of the administration to the challenge of solid and enlightened government.

In the course of the four-day session Members gave notice of 21 motions, 16 of which were adopted.

Among motions adopted was one stating that the Ninth Assembly did not consider itself bound by the previous assembly's position paper on constitutional development in the NWT. The motion recognized the significance of the North's constitutional development and said that the assembly would in future give due consideration to all proposals for constitutional development, including the one prepared by the Eighth Assembly.

A motion passed that the Ninth Assembly did not support and would not be bound by the principles relating to the settlement of native land claims as established by the Eighth Assembly in October, 1978. A motion was also adopted that the Government of Canada must re-establish negotiations immediately concerning the Inuvialuit land claim.

The House adopted a motion calling for a committee to study the problem the sharp petroleum price increases will create on the NWT. The committee will make representation to the NWT administration and the federal government.

The Legislative Assembly established a number of standing committees to deal with finance, legislation, with rules and procedures. The House also established a special committee on unity to determine the means by which political consensus could be generated amongst the people of the North.

The commissioner accepted the recommendation of the Legislative Assembly that the following members be appointed to serve on the Executive Committee: George Braden, Yellowknife North; Tom Butters, Inuvik; Arnold McCallum, Slave River; Richard Nerysoo, Mackenzie Delta; James Wah-Shee, Rae-Lac La Martre.

The House further resolved that two additional members be appointed to the Executive Committee at a later date and that they be from arctic constituencies.

The session prorogued November 16, 1979.

Science Advisory Board

The Northwest Territories Science Advisory Board was established to provide advice and support to the Legislative Assembly on matters of science, engineering and technology. The 10-member board is composed of both northern and southern Canadians knowledgeable in scientific and related problems in the Northwest Territories. Three regular meetings were held in 1979, one each at Yellowknife, Fort Providence and Inuvik.

The board continued its summer student employment program. During the summer of 1979, 20 Northwest Territories high school students participated in field studies conducted by scientists.

The studies on human demography, renewable resources, and nutrition, commissioned by the board, were completed and will be published. A new study on heavy metals is under way and a study on forestry in the Northwest Territories is planned. Two short statements summarizing the board's discussions on further education in the Northwest Territories, and a proposed Yellowknife Scientific Resource Centre, were published.

Clerk of the Legislative Assembly

Apart from providing professional advice on procedural matters to the Speaker and members, the Clerk of the Legislative Assembly provides administrative and support services required by the Legislative Assembly and its committees during sessions and throughout the year.

The clerk's office duties include preparations for sessions, recording, editing, printing and distributing Hansard and maintaining the records of the assembly.

Close liaison with the office of the Chief Electoral Officer of Canada was maintained by the clerk's office to ensure an efficient October 1 election.

The clerk and his staff, who in the past reported to the commissioner, are now reporting to the Speaker of the Legislative Assembly.

Department of Education

During 1979 emphasis was placed on preparing northern people for employment. A two-year pilot project was begun to train teachers in Frobisher Bay. A comprehensive classroom assistants training program was introduced at both certificate and diploma levels. Plans are under way to provide a training program in 1980 that would allow classroom assistants to become fully-qualified teachers.

Vocational and Higher Education

The new trades complex in Fort Smith was officially opened August 17, 1979. As a result, students will be able to complete their entire apprenticeships in both carpentry and mechanics without having to leave the North. Planning has started to add the plumbing and electrical trades to the list of apprenticeship courses.

The old trades building, officially renamed the trades annex, has been renovated to accommodate housing maintenance courses. The in-house programs are: academic upgrading (grades 7 - 12 level), business education, carpentry (apprentice), cook training, driver training, electronics telecommunications, heavy equipment operation, housing maintenance (apprentice), mechanics (apprentice), mechanics motor vehicle, mechanics heavy duty, northern small business management, pre-employment carpentry, pre-employment mechanics, pre-employment welding.

The nursing assistant program now operates in Yellowknife with a curriculum which integrates the practical and theoretical portions of the program. A community service worker program was offered for the first time in October, 1979. This program is an introduction to careers in social and health services.

The Department of Local Government is using space on campus for the arctic airports program. Four programs of four weeks each are available each year to train adults to work in airports in both the Yukon and the Northwest Territories. A marine training program is still available in Hay River.

The renewable resources training program is in its second year of operation in conjunction with Selkirk College, Castlegar, B.C. Seventeen students are enrolled in the first year program and 11 are in the second year. The students are from the Northwest Territories, the Yukon, and one from Labrador on scholarship from Petro-Canada. The school year is supplemented by three compulsory field camps offered in the summer months.

The government has continued its program of financial support for students pursuing higher education. Eligible students are those who have completed their grade 12 program, satisfy the Northwest Territories residency requirements and wish to continue their studies at a university, community college, institute of technology or vocational school in southern Canada. Students are also sponsored for the vocational training programs and the renewable resources training program, both in Fort Smith. The financial assistance includes tuition fees, transportation to and from the nearest university and a board and book allowance. The Northwest Territories also yearly awards a total of 15 bursaries.

Education Programs and Evaluation

During 1979, the Education Programs and Evaluation Division completed development of course outlines for grades 1 - 9 in the core academic subjects of English, science and social studies. These subjects have been introduced to schools through the regional offices and implementation dates have been established. In addition, work was begun on the revision of mathematics, following three years of program evaluation.

Development work started on a comprehensive English-as-a-second language program. The publication, *Action Words*, was revised to support second language teaching.

Workshops were held to prepare local materials for the kindergarten program. Two publications are being prepared using these materials.

A manual, *Story-Time*, was developed to assist primary teachers in the development of teaching techniques and ideas. A manual on writing skills was published to assist teachers of grades 7 - 12.

Le Manuel de Travaux Pratiques was revised in cooperation with the French Teachers' Council.

A new community grade ten program was defined and piloted in two communities. A new northern social studies course, *Sociology 20: Community Life in the Northwest Territories*, was introduced.

A community service work course was developed as part of the health and social services training project. Development work started on the community health representative program and the community social service work program.

A mathematics program assessment was conducted and recommendations made for program revision. Essay writing assessment was conducted for grade 10 and 12 students. Work started to develop a comprehensive evaluation policy for programs and student achievement.

Linguistic Programs

The Linguistic Programs Division provides the Department of Education with expertise on the use of native languages in education. The division develops policies, provides courses and materials on native language teaching and assists in training native bilingual teachers through workshops and visits to the teacher education program in Fort Smith and Frobisher Bay.

During 1979 an Inuktitut language curriculum was introduced. A reading series on Coppermine Inuktitut was completed. A Chipewyan literacy workshop was held in Snowdrift in June for Dene languages. A course on Cree and Chipewyan as a second language was developed for presentation in Fort Smith.

Workshops on Slavey were conducted in Fort Simpson and Fort Franklin. A complete Slavey language program was begun, based on the Fort Norman dialect.

Schools

Enrolment in Northwest Territories schools in September, 1979, was 12 464 students. Planning for the replacement school in Rankin Inlet is now complete. Construction was scheduled to start in the summer of 1980. New schools in Fort Norman and Coral Harbour are presently under construction and both will be ready for the 1980-81 school year.

A replacement for William McDonald Junior High School is being planned and designed for the Yellowknife Public School Board.

Student exchanges took place between schools in Fort Smith and Hull, Quebec; Spence Bay and Toronto; Coppermine and Toronto; Sanikiluaq and Bradford, Ontario; and Grise Fiord and Edmonton.

Department of Local Government

The Department of Local Government assists local councils to understand the opportunities for increased self-government and responsibilities associated with greater control at the community level.

The development of communities toward more responsible government continued. On October 1, 1979, Broughton Island became the 19th community to achieve hamlet status and Chesterfield Inlet prepared for hamlet status in April, 1980.

The Recreation Division was transferred from the former Department of Natural and Cultural Affairs to the Department of Local Government in October, 1979. A major emphasis will be on making recreational programs responsive to community needs. Local councils will assume greater responsibility in this work.

Municipal Affairs

The 1979 emphasis was development of greater competence in administration, financial planning and accountability at the municipal level.

Bi-annual seminars for senior administrative personnel from the municipalities were instituted. Frequent meetings were held with municipal councils on fiscal and procedural matters.



An Inuit student at Pond Inlet in the high arctic.

Work commenced on development of an Incorporated Communities Ordinance to provide hamlets with more choice in management of their affairs. The new legislation would provide for incorporation of settlements so they could assume responsibility for programs at their own pace. At the same time, the Municipal Ordinance is being reviewed to keep pace with the needs of municipalities.

An expansion of the assessment and taxation program extended property taxation to all communities. This should provide a more equitable taxation system and a basis for developing greater financial responsibility at the community level.

Assistance was given to councils wishing to accept greater responsibility for programs by transfer from the territorial government to the local government. A significant step was the transfer of responsibility for administering local social services to the village council of Frobisher Bay.

Town Planning and Lands

Continued emphasis in 1979 was placed upon the preparation of townsite improvement and expansion plans as well as general development plans for Northwest Territories communities. The land assembly program, undertaken on behalf of the Northwest Territories Housing Corporation, is a response to the need for additional and improved housing, economies in providing roads, sewer and water services.

New land assembly works were started in Cape Dorset, Copermine, Igloodik, Lake Harbour, and Tuktoyaktuk. The projects begun in 1978 for Cambridge Bay, Frobisher Bay, Pangnirtung and Eskimo Point are near completion.

Land was purchased in Fort Providence, Fort Resolution and Norman Wells for future public development. The Nanisivik townsite was transferred to the commissioner from the federal government.

Townsites expansion plans were prepared or initiated for Hall Beach, Pelly Bay, Rae, Fort Resolution, Lac La Martre, Fort Liard, Snowdrift, Broughton Island, Clyde River, Chesterfield Inlet, Coral Harbour, Fort Norman, Pond Inlet, Repulse Bay and Whale Cove. A comprehensive general development plan, including a harbour study, was completed for Tuktoyaktuk. General development plans were finalized for Spence Bay and Pangnirtung.

Development and Training

There is now a wide recognition of community councils as the third level of government in the NWT. Assistance was provided to Broughton Island, which became a hamlet, as well as other settlements which expressed interest in working toward hamlet status.

Training activities focused on development of local skills to manage and direct local affairs. This training has been primarily for community councils and council employees. Over 400 have taken part.

Airports

Within the next five years, most NWT communities with populations over 100 will have an improved runway, air terminal building, navigational aids, air-ground radios, weather instruments and equipment or airport maintenance. As improvements are completed the community airports are operated by local people.

To date, major construction has been completed at 14 airports throughout the NWT. Eleven airports are presently under construction and scheduled to be completed in 1980-81 or 1981-82 fiscal years. Site selection and designs of airport development are under way for 13 communities.

Another 13 northerners graduated from the airport observer-communicators training, presented by the Government of the Northwest Territories, Transport Canada and Environment Canada.

There are plans to develop a short airport administration course for northerners. This course will be available to selected observer-communicators and airport maintainers as well as the local councils which operate the airports.

A total of 53 northerners have successfully completed airport training as either observer-communicators or maintainers. There are now 24 observer-communicators and 23 airport maintainers working either full or part time at 22 community airports.

Recreation

The development of athletics within the NWT has increased dramatically in recent years. Sport North, the Federation of Territorial Sport Associations, has been a prime mover of this development. Since its inception three years ago the number of territorial sport associations affiliated with Sport North has doubled to 28.

Increased sport activity has exposed the need for qualified coaches and officials. The National Coaching Development Program provides a combination of general theory and sport technical clinics. A parallel program for officials is presently being developed.

The Jeux Canada Winter Games at Brandon, Manitoba, was a sporting highlight for many of the 130 athletes and coaches who represented the NWT in 11 different sports.

The sixth Arctic Winter Games was held at Whitehorse, Yukon Territory in March, 1980. Sport North, with the Recreation Division's cooperation, coordinated the regional trials in November and territorial trials in January, leading to selection of the NWT contingent.

Development of community recreation leadership was a priority during 1979 with a number of regional workshops being held.

The division provided funding for a number of selected cultural and artistic activities. The Tenth Northern Games attracted more than 250 participants to Inuvik from as far as Alaska and the eastern arctic.

The NWT Council for the Disabled continued to actively support recreation for disabled residents of the NWT.

Department of Economic Development and Tourism

In 1979, the Department of Economic Development and Tourism was restructured to place all activities related to business services and development into a newly-created Division of Commerce. The reorganization followed a lengthy review of the department and was part of the overall restructuring recommended by the task force on administration.

Major emphasis will be placed on providing business management, financial counselling and training to the private sector.

Other changes in the department included creation of a separate division known as the NWT Office of Tourism and Parks and a Division of Planning and Resource Development.

Negotiations for the first General Development Agreement with the federal government were completed. This agreement, together with an interim subsidiary agreement on community economic development, was signed April 4, 1979, by the commissioner and the ministers of the Department of Regional Economic Expansion and the Department of Indian Affairs and Northern Development. The latter agreement calls for the joint expenditure of more than \$3.8 million for community and renewable resource development and planning over two years.

Planning and Resource Development

The Planning and Resource Development Division provides economic planning and policy advisory services, administers the general development and interim subsidiary agreements, monitors the non-renewable resource industrial sector, and researches and evaluates development proposals.

Under the first subsidiary agreement, proposals in the areas of tourism, forestry, fish and wildlife resources and community information and development received funding approval for almost \$600 000.

The division was involved in the work of the new resource development committee, chaired by the Minister of Economic Development and Tourism, particularly in assessing the implications of the Arvik Mine, Polar Gas and Esso Resources (Norman Wells) pipeline proposals.

The division supported the NWT Grade Stamp Association as the forest industry organization and completed a price support agreement to aid fishermen in the Great Slave Lake fishery. A study was completed on agricultural development potential in the NWT and the division participated in the joint tourism industry development strategy study.

Cooperatives

The abandonment of the settlement of Port Burwell and the subsequent dissolution of the cooperatives that served the settlement, reduced the number of active cooperatives in the NWT to 40 in 1979. Memberships are in excess of 3 600 and the annual volume of business transacted increased to \$14.5 million. Permanent employment is 360 with total payroll and benefits of \$2.5 million. In addition, it is estimated that payments made by cooperatives for primary production of fish, fur, arts and crafts and similar products was about \$3 million.

The Canadian Arctic Cooperative Federation Limited continues to provide program assistance to cooperatives. In 1979, with the assistance of Special ARDA, a major training program of native managers was added to the existing development programs. Sales of all products by the federation in 1979 exceeded \$8 million.

Financial Services

The Northwest Territories Eskimo Loan Fund, Great Slave Lake Fishermen's Loan Fund and the Small Business Loans and Guarantees Fund are administered by the Financial Services Section. The Special ARDA program is administered under joint federal-territorial agreement.

The Indian Business Loan Fund (formerly Indian Economic Development Fund) is administered by Indian Affairs and Northern Development in territorial government offices. During the first eight months of 1979 there were four loans approved totalling \$37 300, eleven contributions totalling \$519 800 and six stabilization grants which reduced outstanding loans by \$212 533.

Four meetings of the board of the NWT Eskimo Loan Fund were held in Yellowknife at which loans totalling \$831 609 and contributions valued at \$210 950 were approved.

The board of the Small Business Loans and Guarantees Fund held 10 meetings. The board approved loans valued at \$1 102 450 and guarantees totalling \$100 000.

The Great Slave Fishermen's Loan Fund board held three meetings. The total value of loans approved was \$88 924 with loans valued at \$79 861 either deferred, rejected or withdrawn.

During the year 93 applications for Special ARDA financing were received. There were 49 offers made for financial commitments totalling \$1 590 762 with five applications in process. Of these 54 applications, 19 were Indian or Metis, 29 Inuit, and six from others.

Arts and Crafts

The arts and crafts function supports craft producer organizations and develops an awareness of opportunities. The emphasis is being placed on artists and craftsmen realizing achievement through the newly-formed NWT Arts and Crafts Council or organizations that provide specific services such as Arts and Crafts Branch of the NWT Native Women's Association.

A first step in this direction was the establishment of a carving policy that places the responsibility for obtaining carving material on community-based organizations.

Tapestries of the Pangnirtung Weaving Project show a new vitality. Gjoa Haven sculptures have had a number of successful exhibitions. The women of Pelly Bay have marketed a variety of well-made sewn goods.

Project Operations

Positive steps were taken in 1979 to manage departmental projects as independent business enterprises.

Projects such as the Tuk and Aklavik Fur Shops will become separate cost-revenue centre business enterprises, managed and funded by government, in communities where it is not possible for the private sector to develop this segment of the local economy.

The enterprises presently established include various types of production outlets as well as several industries, such as laundry and retail outlets. These enterprises generate approximately \$1.6 million income for northern residents, employing 160 individuals full-time and 650 on a part-time basis.

Marketing

The Marketing Section participated in four trade shows, two in Calgary and two in Toronto. NWT handicraft products, Inuvik and Frobisher Bay parkas, as well as fur garments from Tuktoyaktuk and Aklavik, were displayed and accepted in the large southern and eastern Canadian markets. A sales catalogue of arctic winter wear was made for wholesalers and major retailers across Canada.

Manpower Development

The Manpower Development Division provides northern residents with opportunities to enter positions in the territorial public service. Training programs are developed with territorial government departments to allow individuals who are not otherwise qualified to enter the public service and receive on-the-job training and experience. Where necessary, training includes academic upgrading, in-service classroom studies, technical school programs, and college or university qualification.

To help northern residents secure employment outside the public service the division enters into on-the-job training contracts with employers in the private sector. These contracts provide employers with salary assistance while individuals are being trained. The program has created employment opportunities in the mining industry in particular.

The division sponsored the Short Term Employment Program (STEP), providing funds for approximately 4 000 man-weeks of labour to community-based organizations throughout the NWT.

The Territorial Employment Record and Information System (TERIS) computerized the employment records of approximately 21 000 NWT residents. TERIS identifies northern skills as they relate to job opportunities.

The apprenticeship program continues to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training in the trades area. As of March 31, 1979, there were 379 apprentices in training across the Northwest Territories, working in 25 different trade areas. Of these, approximately 100 were employed by the territorial government. Under the tradesmen's qualification program, 55 tradesmen achieved certification through examination, five with interprovincial status. In addition, 44 apprentices completed training and were certified as journeymen, 23 of these with interprovincial status.

Tourism and Parks

Visitors to the NWT during 1979 increased by approximately 10 per cent, which includes about 28 000 transient visitors. The TravelArc-tic travelling office in Yellowknife hosted an increased number of visitors.

Several new package tours have been introduced to accommodate tourists, including one to the North Pole, one for char fishing on Ellesmere Island, and a motor coach tour to Yellowknife. Near Yellowknife, there are boat trips and horseback riding expeditions available.

There were several tours of foreign travel agents in 1979, (including one group from the largest travel bureau in Japan), to inspect tourism facilities.

A completely new travel map which included individual community maps was designed in 1979. The "travel trade" edition of the Explorer's Guide, 1979, was published to assist southern travel agencies deal with hotels and lodges in the Northwest Territories.

The Dempster Highway opened to tourist traffic in 1979. Six temporary campgrounds were set up along the highway to accommodate the tourist flow.

A financial agreement has been completed with the Travel Industry Association of the NWT to help hire a manager, set up a permanent full-time office and a recruitment program.

A major study of the tourism industry is in process, composed of a team of professional planners and a steering committee of travel industry representatives from across the NWT.

A major parks study recommended a program of large recreation-oriented territorial parks which would complement the new National Parks of the NWT. The territorial parks section increased its staff to administer this program.

Hire North Program

The Hire North program, funded through the Department of Indian Affairs and Northern Development, is a highway construction program administered by the Government of the Northwest Territories to involve native people in major construction projects. The program also provides training and business opportunities for local people associated with highway construction.

On April 1, 1979, the chairmanship of Hire North committee was assumed by a community representative.

The main training-construction camp is located near Fort Liard. The work includes right-of-way clearing, grading, drainage, and graveling from the Muskeg River to the Northwest Territories-British Columbia border.

Grading and the installation of culverts on the cleared portion of the section and the Fort Liard access road began in March, 1979. Training in heavy equipment operation, mechanical trades, commercial cooking and clerical work continued during the year.

The Liard Highway Project is to be completed in 1983.

Department of Renewable Resources

On October 1, 1979, the Department of Natural and Cultural Affairs was renamed the Department of Renewable Resources. Responsibilities of the new department will be wildlife, fisheries, forestry, water, land management and environmental protection.

The Recreation Division was transferred to the Department of Local Government and the libraries and museum and historical programs to the Department of Public Services.

Wildlife Service Programs

The new Wildlife Ordinance and regulations became effective July 1, 1979. Sub-allocation of quotas and consultation about licences and permits by hunters' and trappers' associations or band councils are now sanctioned by law.

The influence of 43 hunters' and trappers' associations in the NWT will be strengthened by formation of a NWT Hunters' and Trappers' Federation. The federation will focus on national concerns, such as the development of humane traps and fur marketing, as well as purely NWT issues.

Thirty-eight existing outpost camps and 25 new camps were granted financial assistance in the fifth year of the program. More than 500 hunters, trappers, and their families live in these camps.

Hunters' and trappers' associations are expanding their activities by marketing fish, muktuk, seal meat, and other foods in the Baffin and Fort Smith regions.

The Wildlife Service has developed a series of publications in English and Inuktitut about wildlife surveys and research. A variety of radio and television information spots, posters, and slide presentations were produced to explain wildlife programs and important wildlife management issues.

Widespread forest fires in the Fort Smith region damaged the wildlife and trapping industry. The Wildlife Service sponsored a workshop to develop ideas for improved trappers' assistance and fire management plans.

Surveys of muskoxen and polar bear populations brought about increased harvest quotas in several areas of the NWT. An experimental increase of 64 in polar bear harvest quotas was permitted for some communities which agreed to begin hunting after pregnant females denned and to take only large males. By protecting cow muskoxen, the increase in harvests may not adversely affect populations.

A major report on a five-year Mackenzie Mountain grizzly bear research project was completed. It indicated that the bear population was healthy but being utilized to the maximum degree by sport hunters.

Studies of barrenland caribou populations continued to be a high priority. The status of the Beverly, Baffin Island, Kaminuriak, and Bluenose herds was regularly monitored. Research into the Bathurst population, including predator-prey relationships, entered its third year.

The Dempster Highway Interim Management Plan, including regulations designed to protect wildlife along the highway corridor, was implemented. Concerns about moose populations along the Liard Highway were addressed by a two-year management study. A preliminary public report was completed.

Department of Social Services

The Department of Social Services continued emphasis on increased citizen and community participation in the development and delivery of social services. The department maintained its effort to recruit and train northerners for social service involvement.

Northerners now make up approximately 60 per cent of the community social service worker staff, 45 per cent of the child care worker staff, and 30 per cent of the corrections officer staff. These percentages will increase as training is received.

Alcohol and Drug Program

In 1979 efforts were increased to curb the growth of alcohol-related problems in the NWT through public awareness-educational programming.

The alcohol and drug program made 10 presentations to regional and community-based groups, including alcohol education committees, staffs of funded projects and community professionals. Assistance and consultation on alcohol and drug concerns were provided at nine public meetings in communities throughout the Northwest Territories.

Eleven previously-funded alcohol projects were approved for renewal of funding by the NWT Alcohol and Drug Coordinating Council. Two new projects received funding and four applications were rejected. One of the new projects to obtain funding was the Baffin Regional Alcohol and Drug Information Centre located at Pangnirtung. This project is providing alcohol and drug educational services to the region.

Corrections Service

While there was some levelling out of the territorial inmate population during 1978, there was an increase in 1979. This reflected an increase in the number of criminal charges, even though probation and other methods of disposition continue to be used. As a result of the federal-territorial agreement regarding penitentiary inmates in the NWT, more inmates serving two years or more are incarcerated in the NWT system.

Community work programs for those inmates classified as minimum security have proven worthwhile at Yellowknife Correctional Centre, Baffin Correctional Centre, South Mackenzie Correctional Centre and the NWT Correctional Centre for Women in Fort Smith.

Construction of a permanent structure to meet safety standards and provide adequate care and custody for minimum security inmates is under way at the South Mackenzie Correctional Centre in Hay River.

Probation, parole and community service orders for appropriate offenders are increasing. The community service order, which requires offenders to perform, under supervision, a specified number of hours of work in the community, is being used more extensively. This has proven to be an effective alternative to supervised probation and, in some instances, incarceration.

Communication and exchange of information among the NWT, the provinces and federal government on correctional policies is continuing in order to ensure the development of the most competent and cost-effective system possible in the Northwest Territories.

Family and Children's Services

Planning and developing social services for the aged and handicapped received much attention in 1979. Local housing authorities were given funds to provide personal care services to residents of senior citizens' homes. Homemaking programs were sponsored in several communities as a means of serving the aged and handicapped in their own homes. Coordinated home care programs are being developed where health facilities are located.

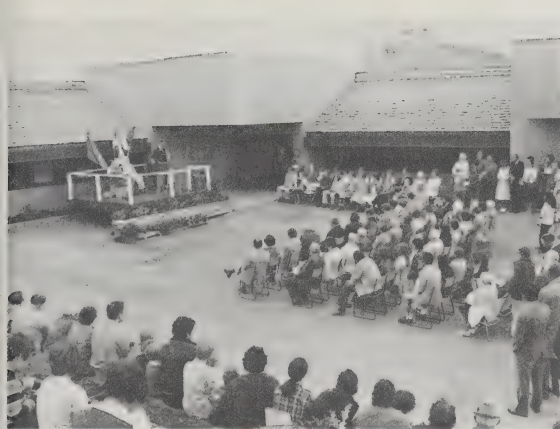
Joint facility planning for the aged, such as the Fort Providence Senior Citizens' Home, is proceeding in conjunction with the NWT Housing Corporation, the Department of Health, and local communities.

Plans for group home programs, one for psychiatric patients and two for mentally handicapped adults, have been initiated. Although statistics indicate that the number of children in care has remained relatively static during the past year, there is mounting pressure from the courts to provide additional services for young people in conflict with the law. Consultants have been engaged to complete assessments on in-care children ten years of age and over in the Yellowknife and Fort Smith regions.

Income Maintenance

Social assistance expenditures have again been affected by economic factors. Social assistance rates were increased in December, 1978, and May, 1979. The average period for which assistance was required increased to 4.2 months from 3.7 months in the previous year. There was, however, a slight reduction in the number of recipients.

A new social assistance management information system will provide improved data gathering and analytical capability for all levels of management, assisting with program evaluation and planning.



The modern new Fort Smith Health Centre officially opened August 29, 1979.

Department of Health

A great deal of emphasis has been placed by the Department of Health on prevention of illness, promotion of healthy lifestyles and an increased awareness of the major problems of the mentally ill, the chronically ill and the aged.

A close liaison was established with federal Medical Services Northern Region as the Department of Health undertook to provide, on contract, financial and administrative services for the region.

The department continued to involve northerners by setting out directions for the 80's that would see health services transferred to the Government of the Northwest Territories.

The insurance systems undertook major developments in registration, disease coding and rewriting of the computer systems to be completed in 1980.

Health Centres

The Fort Smith Health Centre was officially opened August 25, 1979. The centre is one of the most modern and functional small health centres in western Canada, having 15 acute care and 10 chronic care beds. Incorporated into the centre are doctor's office, emergency, social, public health, out- and in-patient services, acute and extended chronic care and community home care. There are also offices for visiting specialists.

The H.H. Williams Memorial Hospital in Hay River continued to serve the population of South Mackenzie region. A homecare program is being developed to include homemakers and "meals on wheels". Community and personnel assessments have been done to demonstrate the need for a nursing home in Hay River.

Stanton Yellowknife Hospital provided regular consulting services to health centers in the NWT through its departments of nutrition, physiotherapy, internal medicine, ophthalmology and otorhinolaryngology. The laboratory, recently renovated, now offers referral services to other hospitals and nursing stations.

A deaf detection and hearing program has been started in cooperation with the Elks and the Department of Health. This involves a training program for nurses to ensure proper screening techniques, the purchase of special audiology equipment and the implementation of a public awareness program.

All three budget review hospitals: Stanton Yellowknife Hospital, H.H. Williams Memorial Hospital, and St. Ann's General Hospital, received their accreditation status from the Canadian Council on Hospital Accreditation. The Inuvik General Hospital was also granted accreditation status.

Territorial Hospital Insurance Services

The Territorial Hospital Insurance Board was enlarged from five to ten members. During the fiscal year, \$14 782 601 was spent by the Territorial Hospital Insurance Services. The annual cost per patient day was \$196.38.

Medical Care Services

An annual registration program for the medical care plan was initiated in 1979. A Pharmacare program for senior citizens was introduced July 1. Supplementary health care coverage was expanded to 12 conditions. In the fiscal year, \$3 102 000 was spent by the NWT Medical Care Plan. The average payment per claim paid was \$16.21.

Department of Personnel

The Department of Personnel plans and coordinates personnel management within the Territorial Public Service.

During 1979 the department improved communications within the organization and between management and the employee association. A major joint project of the two employee associations and the Department of Personnel was the report of the Task Force on Employee Housing which was released in November.

Personnel Services Division

During the year 943 appointments were processed, of which 820 were from the North and 123 from the South. Ninety-four of these appointments were transfers and 207 were promotions of existing employees. A freeze on southern hiring resulted in a significantly higher proportion of northerners being hired than in previous years. A summer employment program for students resulted in jobs for 104 northern students.

Negotiations for a renewal of the collective agreement with the Northwest Territories Public Service Association were satisfactorily concluded in March. A revised two-year agreement was signed to expire on March 31, 1981.

Negotiations with regard to the re-opener provision of the collective agreement with the Northwest Territories Teachers' Association were concluded in April. However, the teachers failed to ratify the tentative settlement. Further negotiations in September resulted in agreement on in-service training for teachers and an increase to salaries and allowances. Following ratification, the agreement was signed in early November.

The addition of Stanton Yellowknife Hospital and Fort Smith Health Center employees to the public service required some amendments to existing provisions in the agreement with the Northwest Territories Public Service Association.

In addition to concentrating on the induction of new employees and making subsequent changes to their pay and status, emphasis was placed on the counselling about the benefits provided through collective bargaining, executive policy, and affiliation with the Federal Public Service.

During 1979, approximately 485 employees attended one or more of the 31 training courses offered by the development section. These courses were conducted at headquarters and in the regions.

Through its education leave program, the government subsidized 15 employees in full-time study at post-secondary institutions in southern Canada. This program is designed to upgrade the employee's job-related skills and effectiveness.

On November 1, the in-service training section was transferred from the Department of Economic Development and Tourism. This program is funded to provide opportunities for northerners to prepare for full-time employment in the public service by a combination of on-the-job experience and formal training.

Office of Native Employment

The mandate of the office of native employment is to promote and enhance native employment by providing northern people with employment opportunities, promotion, education, and/or training. In 1979, the addition of a career counsellor strengthened development of employment opportunities.

There are currently 755 native people employed in the public service. The office plans to work towards substantial increases in these levels in all spheres of the government's activities.

Classification and Compensation

The classification section monitors and controls salary levels of all positions below the senior officer level in the public service. During 1979, pay research was conducted on a number of individual positions.

The Hay Plan continued to operate for the senior management group. This plan features a classification scheme based on know-how, problem-solving, and accountability. During 1979 the senior management group from the NWT Housing Corporation was added to the Hay Plan.

Department of Information

During 1979 the Department of Information implemented its program to expand community broadcasting facilities. Television and regional radio were extended to Fort Liard, Pelly Bay and Chesterfield Inlet. Installations were also completed at Coral Harbour and Arctic Bay earlier in the spring. With Fort Norman having received facilities late in 1978, there are now six communities serviced by the program.

The program provides satellite-fed northern television and radio service to locations with populations between 250 and 500. A total of 18 communities are eligible. All but one of the sites serviced so far, Pelly Bay, have established a local radio station that ties into the satellite package. Four more communities will receive facilities in the 1980-81 fiscal year.

Grants were provided to community radio stations to assist with high operating costs. There are now 23 community radio stations operating throughout the NWT.

Public Affairs

A major project was co-production with ACCESS Alberta, the province's educational TV corporation, of a film on alcohol prohibition and other local control options in the NWT. Filming and interviewing were done in four communities. Both English and Inuktitut versions were produced. The film will be shown on television in Alberta and in communities throughout the NWT and will be seen elsewhere in Canada by schools, social agencies and public interest groups.

A separate audio-visual section was formed. Continued use was made of the CBC's Anik-Info service. Free time slots between TV programs are being used to provide information on government programs and services.

Public affairs officers replied to about 200 public enquiries and produced about 300 news releases. Copywriting was also done for advertisements and publications.

A visual identity program, which formalizes a strong, progressive and unified image, was developed for the government of the Northwest Territories. A modified version of the popular TravelArctic polar bear logo will be used by all departments, regions and other government boards and agencies. The territorial shield will be used by the Executive and the Legislative Assembly.

The head of the printing bureau was appointed as the Territorial Printer. The first publication under his auspices was the official consolidated Orders and Regulations of the Northwest Territories. The Northwest Territories Gazette was published for the first time in October, 1979.

Interpreter-Translator Corps

Six interpreter trainees began training at a workshop in Eskimo Point from June 22 to July 5. Instruction was given in Inuktitut and English vocabulary, grammar and writing, translating and interpreting.

With the hiring of a linguistics development officer and an English up-grading officer, on-going training in Inuktitut and English is benefitting all corps members and trainees. The Interpreter Corps is continuing its involvement in Inuktitut development. An Inuktitut-English word list compiled from corps members' word banks was published in 1979.

In 1979 joint action between the NWT Interpreter Corps and the Cultural and Linguistics Section of the federal Department of Indian Affairs and Northern Development, resulted in the second national Inuktitut Word Conference held in Ottawa. The December conference was attended by delegates from all regions of the NWT, Northern Quebec and Labrador.

Department of Public Works

The Department of Public Works designs, constructs, acquires, operates and maintains all the buildings, technical facilities and services required for the government of the NWT.

The total budget for the department's activities in 1979 was approximately \$55 million. The capital expended by the department in new works and buildings and retro-fitting was another \$37 million.

Practically all the energy used in the Northwest Territories is oil-dependent. Almost all electricity is generated by diesel, heating is by fuel oil and transportation is dependent on gasoline and oil. Because energy costs are so high, and will become much higher, considerable emphasis is being placed on low energy consumption in buildings and works. Present programs and new programs will include retro-fitting of existing buildings and works for higher energy efficiency.

Architectural Division

Major construction in 1979 included new schools for the communities of Coral Harbour and Fort Norman.

The first community services centre combining community and government facilities is under construction in Broughton Island. The building containing a gymnasium-social hall, hamlet and government offices, council chamber, post office, community radio station and related facilities is scheduled for completion early in 1980. Similar facilities are under study for other communities.

Planning is under way on a three- to five-year program to replace 51 metal prefab-type staff housing units in Frobisher Bay. Siting and scheduling of these units have been developed in consultation with the community to ensure adherence to the village's development plan.

Correctional facilities in the territories have been increased with the construction of the South Mackenzie Correctional Centre in Hay River.

Facilities have been planned to accommodate tourist traffic along the new Dempster Highway with campgrounds being scheduled for construction in 1980 at Inuvik and Fort McPherson.

The Prince of Wales Northern Heritage Centre was completed and officially opened.

Engineering Division

Major new water supply and sewage disposal facilities were constructed in 14 communities. These included a 27 million litres lined reservoir in Fort Good Hope, a year-round water intake and water treatment plant facility in Aklavik, sewage treatment and submarine disposal outfalls in Norman Wells and Rankin Inlet and a unique combination sewage disposal and garbage incinerator facility in Pangnirtung.

Foundations using steel pipe piles were carried out in 15 communities for various structures including major buildings, garages, pump houses and single family dwellings. The work was carried out from mid-April to mid-August, and allowed building construction to proceed immediately upon arrival of materials on the annual sealift resupply.

Systems designed to recover waste heat from N.C.P.C. diesel powered generator plants were installed in four communities and are expected to significantly reduce the costs of heating various government owned facilities.

Accommodation Services Division

A program to reduce the number of leased housing units was implemented, resulting in the release of 28 units. This, however, was partly offset by the need to lease ten units at other locations.

Highways Division

Highway maintenance included the addition of the Dempster Highway from the Yukon boundary to the Peel River for winter operation. Reduction of operations on other highways was necessary due to financial restraint.

A ferry operation was added at the Peel River crossing even though permanent shore works were still incomplete. A substitute vessel for ferry service at the Mackenzie River crossing on the Dempster Highway was required. A new ferry vessel for Peel River should be ready for service by mid-season 1980.

The Hay River Highway was paved between Enterprise and Hay River as was a four kilometre stretch of Route 1 immediately east of the intersection with Route 3. Granular production was done in preparation for continuation in 1980 of light pavement construction between Pine Point and Hay River. Rock blasting and crushing of surfacing material was carried out along the Ingraham Trail in preparation for reconstruction.

Projects undertaken for the Department of Local Government included site development at the Hay River Indian Reserve, road construction and landfill at Eskimo Point, construction of a new access road to Fort McPherson from the Dempster Highway, building of a road to the water supply lake at Chesterfield Inlet and street construction in Fort Providence.

Department of Justice and Public Services

In October, 1979, the Department of Public Services became Justice and Public Services to better describe new areas of responsibility being assumed in the early 80's from the federal government. Two new divisions were added, museums and libraries, which were formerly part of Natural and Cultural Affairs.

Legal Services

Legal Services Division provides legal advice and services to the territorial government.

The now-complete consolidation of the Regulations of the Northwest Territories provides the public with easy and accurate access to the current regulations.

The Legal Services Division carries out, through its public trustee officer, the function of administering estates in the Northwest Territories. The Legal Services Division has the responsibility, through the registrar of securities, to administer the provisions of the Securities Ordinance.

Court Services

The Court Services Division provides support services for the judiciary of one Supreme Court judge, two territorial court judges in Yellowknife and one territorial court judge in Hay River. Extensive travel throughout the Northwest Territories is involved in all aspects of court services.

Also included in this division are the office of the sheriff, court reporters, court library, and the inspector of legal offices, who is also the chief coroner and territorial firearms officer. There are 94 justices of the peace and 75 coroners in the Northwest Territories.

Registries

The legal registries section provides information on and registers documents affecting land and chattel ownership, companies, societies and cooperative associations.

Of the 3 429 limited companies registered to do business at March 1979, a total of 1 024 were incorporated in the Northwest Territories. There were 269 new companies placed on the companies register during the past year.

A total of 1 030 births, 216 marriages and 182 deaths were registered.

A total of 625 business licences were issued under the insurance-professional business licence section. The licensing of professional persons in the territories remained constant. A total of 320 licences were issued, including 210 to persons in the medical profession.

There were 128 insurance companies licensed in the past year. Seventy-five insurance agent licences were issued to resident and non-resident agents.

Legal Aid

A new Legal Services Ordinance was enacted in March, 1979, creating a Legal Services Board. Prior to the ordinance, the legal aid scheme, established in 1971 by agreement between the federal and territorial governments, continued to be well used by northerners. The scheme was supported by the supplementary services of Maliginik Tuksiniakvik (legal services clinic in Frobisher Bay) and the Native Courtworkers program serving the Mackenzie Valley. A total of 1 780 cases were handled in the year.

Highway Transport Board

The Highway Transport Board regulates the commercial trucking industry in the territories. In the past year it processed 202 applications for operating certificates. Of these, 80 were issued to companies or individuals resident in the territories and 122 to non-resident companies, mainly from Alberta.

With the opening of the Dempster Highway the board granted applications for operating authority to nine trucking firms, six in Inuvik and three who do business in the North. The board also granted operating authorities to two Yukon firms.

Public Utilities Board

The Public Utilities Board deals with applications brought before it by territorial utilities. During the past year the board dealt with three applications.

The Board reviews the financial operation of the utility and ensures that the cost to the consumer represents the costs of the utility plus a fair return on investment.

Northern Canada Power Commission (NCPCC) applied for rate increases and approval of operational policies.



Egwadluk Pootoogoo inks a stonecut at the world renowned Cape Dorset printmaking project.

Motor Vehicles

A total of 18 561 drivers were licensed, compared to 20 189 in the previous year. A total of 18 923 vehicles were registered compared to the previous year's figure of 19 977.

There were 862 accidents in the year, including six fatal, 164 involving non-fatal injuries and 692 with property damage only.

Safety Division

The Industrial Safety Section conducted a program of work-place inspections, educational seminars and workshops. Employers and employees were assisted in identifying existing and potential hazards in the work environment.

Activities of the Fire Section included reviews of 153 projects and structures, a 15 per cent increase over the previous year. Training in fire awareness for public servants, the public and school students has complemented the more specialized training given community fire departments.

The Mechanical-Electrical Safety Section increased its workload. Activities include mechanically-related fire and accident investigation, equipment and installation inspection, plan and design reviews and information dissemination.

The Occupational Health Section assessed hazards in the workplace and implemented corrective measures. Guidelines have been developed in a number of areas for prevention of occupation-related illnesses.

The Labour Section administers the Labour Standards and Fair Practices Ordinance. The Labour Standards Board heard appeals of the decisions of the labour standards officer.

Museum and Historical Programs

The Prince of Wales Northern Heritage Centre was officially opened to the public April 3, 1979, by His Royal Highness, the Prince of Wales. Despite a cold day, more than 1 000 people attended the ceremony and accompanying festivities.

The Northern Heritage Centre is open year round with extended hours from June through September. During that period there were nearly 13 000 visitors from all parts of the world.



Nukinga Maniapik weaving tapestries at Pangnirtung.

Efforts are being directed at developing public programming. Tours for local school classes began in June and continued throughout the academic year.

Special events included an open house in recognition of International Museums Day and a "paint-in" to celebrate the International Year of the Child. More than 500 school children participated in these two events. Formal school programs began in October with a choice of nine programs ranging from musical instruments and the fur trade to the care and repair of museum collections.

The Northern Heritage Centre's Archives is both a facility for historical research and an information service. Researchers, scholars and the public are given help locating historic documents either among the Archives' collections or in other institutions.

The most significant donation to the Archives library in 1979 was the Arctic Exploration Library of Sir Leopold McClintock, the Royal Navy officer who discovered the fate of the Franklin Expedition. Sir Leopold's grandson, N.R. McClintock, donated this collection of books, many of which are now very rare.

In addition to the public programs, work continued on the development, preservation and interpretation of permanent collections. By September, 1979, a total of 1 200 artifacts, specimens and works of art were acquired. The majority of these acquisitions were in the fine arts field, as complete sets of Inuit prints from the various cooperatives are now purchased as they are issued. A major collection of Baker Lake artist proof prints from the years 1970 through 1976 was also purchased.

A large collection of Dogrib clothing, equipment and utensils was purchased from Operation Heritage in Fort Rae. Operation Heritage reproduces traditional Dogrib material culture as authentically as possible, using traditional materials and skills.

During the summer of 1979 four archeological projects were financed in whole or in part by the research section of the Northern Heritage Centre. Archeological surveys were conducted along the coast of Coronation Gulf, at Fort Conger, Porter Bay, Cape Colen, Cape Columbia, Axel Heiberg Island and Auyuittuq National Park, as well as the Northwest Territories islands off the coast of Inukjuak.

Library Services

Community libraries throughout the Northwest Territories continue to be well used. In 1979, circulation increased 7.5 per cent over the previous year. More than 80 000 volumes, out of total holdings of approximately 100 000, are in the collections of the member libraries.

Cassette kits provided through the David Kootook memorial program have proven popular with young library users. A number of commercially-produced cassettes on the adult level have been purchased for distribution in 1980.

Department of Finance

The Department of Finance directs the financial management of government operations.

During 1979, the department participated in a task force whose recommendations resulted in a departmental reorganization placing increased emphasis on financial planning and analysis.

In 1980, supply services functions will be carried out as separate departmental programs. The Department of Finance will complete the development of a new financial information system which will provide enhanced reporting capabilities throughout the government and facilitate financial decentralization through the installation of regional computer facilities.

Budgets and Fiscal Planning

The Budgets and Fiscal Planning Division is responsible for the planning, coordination, analysis and consolidation of the operating and capital budgets of the Government of the Northwest Territories. The division provides support services to the government's financial committees and prepares main and supplementary estimates and other budget information for the Legislative Assembly.

In 1979, the division assisted in inter-governmental financial negotiations. It served in an advisory capacity to other government departments and developed reporting systems geared toward effective financial management.

Supply Services

Supply Services looks after government purchasing, warehousing and transportation services and provides petroleum products to communities where no private sector facilities are available.

The ability to provide petroleum products was severely affected in 1979 by shortages and escalating costs. Improved community distribution agency contracts were signed to ensure continuous customer service, and a new billing and inventory system was introduced. Model tank farms were completed in Fort Wrigley, Broughton Island, Cape Dorset, Lake Harbour and Clyde River. Aviation fuel facilities installed in Rankin Inlet represent the beginning of a territorial aviation fuel supply program.

The Transportation Section coordinates the annual re-supply via sealift, barge and airlift. It also plays a coordinating role for all government air charters throughout the territories. Re-supply distribution studies were done for the Baffin and Keewatin regions and changes in re-supply shipping patterns will be recommended to lower costs without loss in the level of service.

Financial Services

The Financial Services Division provides financial and payment services to all government departments and regional operations. This involves facilities for payment to employees and suppliers, revenue collection, taxation, funds and investments and risk management.

The division prepares the territorial accounts and manages the consolidated revenue fund. It administers the payment of all loans drawn from the federal government and Central Mortgage and Housing Corporation.

During the past year the division developed financial procedures and documentation and presented seminars to familiarize staff with financial information systems.

A decentralization of financial responsibility to departments in Yellowknife will be implemented in 1980. A major revision of the Financial Administration Ordinance is planned which will place responsibility for financial management at the department level.

Systems and Computer Services

The Systems and Computer Services Division continued its planned decentralization of operational and program activities. This will be accomplished by placing terminals in various departments, thus allowing entry of information directly from those locations.

A number of new information systems were developed and implemented. A housing information system now helps place employees in rental accommodation and provides rental statistics. A student record system provides information on student population for curriculum and school planning. The Pharmacare program for senior citizens was put on computer early in 1979.

The Executive Offices

The year 1979 marked the close of one era in the history of resident government in the Northwest Territories and the opening of another. In April, 1979, the Northwest Territories bid farewell to Commissioner Stuart M. Hodgson, who for 12 years had served the Northwest Territories. The territories then welcomed, as the second resident commissioner, John H. Parker, a northerner of long-standing who, for 12 years was deputy commissioner.

At a farewell dinner residents of the territories and representatives of many organizations and associations expressed their appreciation to the Hodgsons and wish Mr. Hodgson well in his new role as Canadian chairman of the International Joint Commission in Ottawa.

In May, 1979, the Northwest Territories said farewell to another Executive Committee member, Assistant Commissioner Gary Mullins. Mr. Mullins was assistant commissioner for three years and left the Government of the Northwest Territories for a business venture in Vancouver. The phasing out of the assistant commissioner's position was a planned step in the evolution of responsible government in the Northwest Territories.

In an address during his investiture ceremony, Commissioner Parker committed himself to continuing to work toward fully-responsible government in the Northwest Territories and to turning over, as quickly as appropriate, the administration of the territorial government to elected members of the Legislative Assembly. He will continue to pursue the transfer of more responsibilities from the federal to the territorial government and devolve further responsibilities from the territorial to the community level.

Task Forces

Commissioner Parker appointed a Task Force on Administration to study the administrative organization of the territorial government and make recommendations on changes which would better equip the government to discharge its responsibilities to northern residents.

The task force's final report and recommendations were presented in early July. On September 21, Commissioner Parker announced an implementation schedule for the recommendations. Some of the key changes made as a result of the report were:

- The Department of Natural and Cultural Affairs became the Department of Renewable Resources and the Department of Public Services became the Department of Justice and Public Services;
- A Mines and Petroleum Division was established within the Department of Economic Development and Tourism;
- Reporting for the Clerk of the Legislative Assembly changed from the commissioner to the Speaker of the Assembly.

In its report, the task force stressed the need for strong advisory support to the executive committee. Former Baffin regional director Mike Moore was named secretary to the executive committee and head of a new policy secretariat. This move was in line with the desire to consolidate executive office functions with those of the former Department of Planning and Program Evaluation to increase efficiency and reduce operational costs.

Responsibilities of the existing Department of Finance will be split and a separate Department of Government Services will be created April 1, 1980. A financial secretariat of a financial advisory group and the directorate of the treasury were also created.

A joint union-management task force on employee housing was organized and reported in 1979. The report, presented in November, recommended that rental accommodation for existing employees in Yellowknife, Hay River, and Fort Smith be discontinued by August 31, 1982. The task force concluded that the artificial situation generated by high numbers of government subsidized units is no longer desirable in these locations.

Executive Committee

An expanded 22 member assembly was elected as the Ninth Assembly on October 1, 1979. The Minister of Indian Affairs and Northern Development authorized an increase of from three to not more than seven elected executive members to serve on the executive committee. During the first session of the Ninth Assembly members were selected to serve on the Executive Committee, Commissioner Parker assigned them the following portfolios:

- George Braden, Minister of Economic Development and Tourism;
- Thomas Butters, Minister of Education and of Justice and Public Services;
- Arnold McCallum, Minister of Health and of Social Services;
- Richard Nerysoo, Minister of Renewable Resources;
- James Wah-Shee, Minister of Local Government.

On November 15 the Minister of Indian Affairs and Northern Development appointed Robert S. Pilot as deputy commissioner of the Northwest Territories. Mr. Pilot is a northerner of long standing, having first come to the Northwest Territories in 1953 as a member of the Royal Canadian Mounted Police. Since 1975 he was senior executive assistant to the commissioner. Mr. Pilot joins the five elected members on the executive committee.

Liquor Control System And Liquor Licensing Board

The Liquor Control System purchases, distributes and sells alcoholic beverages to the residents of the Northwest Territories through liquor stores and agencies and various licensed outlets. The system provides administrative support to the Liquor Licensing Board.

Gross sales for the fiscal year ending March 31, 1979, reached \$12.78 million, an increase of 5.2 per cent over the previous year.

There has been continued interest by communities in taking advantage of local-option plebiscites to vote on some form of liquor rationing, restriction, or outright prohibition. As of September 1, 1979, prohibition was in force in 14 communities and restriction was enforced in five.

Territorial Audit Bureau

The Territorial Audit Bureau helps improve the quality of financial management within the Government of the Northwest Territories while ensuring public funds are expended for the purpose for which they were voted by the Legislative Assembly.

The bureau reports to the commissioner. The deputy commissioner serves as chairman of the audit committee.

In expanding the role of internal audit, the bureau was successful in cost sharing of audit training with public firms. This training is a step toward achieving the expertise and efficiency of audits being done by the Auditor General of Canada.

A training program encourages native peoples to work towards a professional status and helps field staff overcome financial and accounting problems.

Workers' Compensation Board

The Workers' Compensation Board of the Northwest Territories is responsible for the administration of the Workers' Compensation Ordinance and the adjudication of all matters arising under that ordinance.

Increases in workers' benefits, based on an increase in the workers' maximum assessable income, became effective January 1, 1979. During the calendar year 1979, 2 289 new claims were processed. The total number of employers registered was 3 178.

In 1979 the board raised pensions payable to existing pensioners by 45 per cent in respect of pre-1977 accidents, including the 1977 and 1978 increases already granted.

In 1979 fixed assessment rates were established on the employer classifications, resulting in reduced rates for over 90 per cent of the employers in the NWT.

Housing Corporation

In 1979, the fifth year of operation for the Northwest Territories Housing Corporation, public housing units began changing to designs more suited to the climate, environment and lifestyle of the people in each community.

The 1979 construction program provided 209 units of which 25 were of the 1978 prefab design, 100 Woolfenden design units, 44 stick-built single family units, 12 multiple housing units, 12 single person units and 16 senior citizens' units.

The 100 Woolfenden units are newly designed to use an estimated 20 per cent less energy than the corporation's recent house models. They have new or improved features such as cathedral-type ceilings, improved vapour barrier installation, new truss-joint systems and improved heating and duct work. The Woolfenden design was erected in Baker Lake, Eskimo Point, Cambridge Bay, Coppermine, Gjoa Haven, Broughton Island, Hall Beach, Igloodik and Pond Inlet.

A comprehensive program of rehabilitation was initiated in 1979. Sixty-seven units, built between 1969 and 1973, were brought up to modern-day standard. Most of the restoration contracts were handled by local housing associations.

Construction of a senior citizens' home in Fort Providence was completed in 1979. After many months of consultation, the people chose a senior citizens' facility, unique in the Northwest Territories, of three small buildings rather than one large. It provides 16 units, of which four are for extended care, and one for handicapped.

A total of 3 915 units are administered by local housing associations and authorities.

A plan for making tenants responsible for conservation of energy is under study by the corporation's board of directors. A program has evolved whereby an average consumption on a community-by-community basis will be established, allowing for seasonal differences throughout the year. Any power used over this average amount would be paid by the tenant at a subsidized rate.

In 1979, a great deal more training was provided both for housing association staff and the corporation staff members who work with the community housing associations. A training workshop, cost-shared with CMHC, was held in Fort Providence for corporation field staff.

The first housing conference for the Keewatin, cost-shared with CMHC, attracted 29 delegates to Rankin Inlet in September. Policy changes and commitments were made and 15 resolutions passed by the delegates. A similar conference was held in Cambridge Bay in November.



Broughton Island became the 19th hamlet in the NWT in October, 1979.

An eight-month construction training program was completed in Pangnirtung. Under this program, cost-shared by CMHC and Canada Manpower, six trainees were responsible for the entire construction of one duplex, with the exception of the sub-trade portions of plumbing, heating and electrical work. The Pangnirtung program was increased to 12 trainees for the 1979-80 building season. Similar construction training projects were started in Eskimo Point and Cambridge Bay.

The report of the task force on northern housing was completed in late fall, 1979. This task force was co-chaired by CMHC, the NWT Housing Corporation and the Mackenzie Valley Housing Association. The task force report established a course of action to improve housing production and conditions in the territories over the next 10 years.

The corporation continued to provide some modest home ownership programs. The rural and remote housing program, operated in partnership with CMHC, was used by seven families living in three communities in the Mackenzie Valley. This program assists lower income families to buy or build modestly priced homes by subsidizing the mortgage payments.

A popular program offered by the corporation is the small settlement home assistance grant program. The program allows people in designated smaller communities to use indigenous materials, such as logs, to build the shell of their homes. In communities above the treeline, a grant covers the cost of buying a very modest shell, finishing and transportation.

An interim financing program provides interim or bridge financing to registered members of building co-ops who have approved mortgages. ■

Responsibilities

The government administers Yukon in accordance with the Yukon Act, Yukon Ordinances and applicable federal laws.

Executive Council Office

Responsibilities

The Executive Council Office provides advisory, administrative and secretarial services to the Executive Council, the Cabinet Committee on Legislation, the Subcommittee on Finance and the Permanent Advisory Committees on Internal Management and Economic and Social Planning. It also provides administrative and executive support to the offices of the government leader and the commissioner. Information concerning changes in legislation and internal policy guidelines are provided to all Government of Yukon departments. Financial and personnel management support services are provided to the Intergovernmental Affairs Office, the Land Claims Secretariat and the Internal Auditor.

Review 1979-80

The Minister of Indian Affairs and Northern Development changed the structure of government in Yukon during October, 1979. The change gave administrative control of the Government of Yukon to the five-member wholly-elected Executive Council. The commissioner's role was amended and portfolios previously held by the commissioner were transferred to Executive Council members.

The Executive Council members, sworn into office in a public ceremony October 22, were the Hon. Christopher W. Pearson, president; the Hon. Hector Daniel Lang, member; the Hon. Douglas Roy Graham, member; the Hon. Peter J. Hanson, member; and the Hon. Meg Sutherland McCall, member.

Portfolio responsibilities for the Executive Council members at the end of the fiscal year were: Government Leader Pearson-Finance, Pipelines, Land Claims, Public Service Commission, Intergovernmental Affairs, Executive Council Office; Mr. Lang-Highways and Public Works, Municipal and Community Affairs, Yukon Housing Corporation, Yukon Liquor Corporation; Mr. Hanson-Renewable Resources, Tourism and Economic Development; Mr. Graham-Education and Manpower, Justice, Information Resources, Government Services, Consumer and Corporate Affairs; Ms McCall-Health Services, Human Resources, Workers Compensation Board.

Commissioner Ione Christensen resigned October 9 and the post of deputy commissioner was dissolved. Former Deputy Commissioner Doug Bell retained his federal appointment as administrator of Yukon and will continue in that capacity with the authority and responsibility of the commissioner until a new commissioner is appointed. Grafton Njootli and Howard Tracey, members of the Yukon Legislative Assembly, members of the Executive Committee, resigned during the year.

The Executive Council visited every Yukon community during 1979 and plans similar informal visits during 1980.

Plans for 1980-81

The Executive Council is preparing a policy to legalize the new structure of government, work towards an early settlement of Yukon Indian Land Claims and promote economic stability in Yukon.



Last of a once powerful and majestic transportation system along the Yukon River is the S.S. Klondike. Now a national historic site, the "Klondike" is being restored. More than 200 sternwheelers operated on the Yukon River between Whitehorse and the Bering Sea off Alaska.

Yukon Public Service Commission

Responsibilities

The commission administers recruitment, selection, staff training, contracts, collective bargaining, job evaluations, pay, staff control, organizational reviews, employee appraisals, safety and benefits. The commission administers the Public Service Commission Ordinance, the Public Service Staff Relations Ordinance, the Territorial Employees' Superannuation Ordinance, and pursuant regulations.

Recruitment and Selection

A total of 1937 permanent and casual appointments were made during the fiscal year. Included were 600 civil service permanent appointments, 65 permanent full-time teachers, five permanent part-time teachers, kindergarten teachers and teacher aides. Of the civil servant appointments, 95 per cent were Yukon residents, an increase of seven per cent over the previous year. There were 59 appointments due to transfer within the service and 83 to internal promotions. Terminations from the civil service included approximately 35 per cent of the total staff establishment.

Increased efforts will be made during 1980-81 to promote from within the service and rely more on hiring locally. The increasing sophistication of government services will require recruitment from outside Yukon when suitably-qualified candidates cannot be located in the territory.

Staff Training and Development

The commission expanded its program of seminars, workshops and training courses for public servants. Numerous short courses were offered in Whitehorse, ranging from one to five days in duration and aimed at all classification levels up to and including department heads.

An internal training coordinating committee is being formed to assist course development. Special emphasis will be placed on career development and enhancement of Yukoners' opportunities for advancement.

A training policy and guidelines for its implementation are being developed to achieve recruitment, training and career development for women, disabled, and native peoples.

Classification and Employee Relations

Throughout the past year the division continued to present internal seminars covering description writing and job evaluation. An additional seminar was developed on Employee Performance Evaluation.

A number of class reviews were undertaken and a consultant was engaged to review the classification and pay plan applicable to the deputy heads of government departments. The division is identifying and developing a classification plan for senior civil servants who report to deputy heads and have executive responsibility for the direction and control of major programs.

At the end of the fiscal year, the Employee Relations Division opened negotiations with the Public Service Alliance of Canada concerning the revision of the collective agreement governing terms and conditions of Yukon civil servants' employment. Most issues have been resolved and those in dispute have been referred to a conciliation board. Negotiations with the Yukon Teachers Association are expected to commence in June. The collective agreement governing the terms and conditions of employment of teachers expires August 31, 1980.

Employee Benefits

The documentation of transactions under recruitment and selection, classification, revisions in pay, are all handled by this division. As well, the division processes a large number of documents relating to all types of leave, Yukon Bonus, superannuation, long-term disability and disability insurance, death benefits, GSMIP, medicare and contract employees. The division developed and coordinated two pre-retirement seminars during the fiscal year. The format of these seminars will be changed to emphasize long-term planning for employees approaching retirement.

Changes resulting from re-negotiated collective agreements will require considerable division time and effort to process the required payroll alterations. The division's supervisor and a recruitment officer are planning joint field trips to outlying communities and work locations to familiarize employees with civil service procedures and fringe benefits.

Safety and Security

The government's safety program continues to emphasize employee safety, education, first aid courses, and safety inspections. Increased emphasis will focus on winter survival for employees who are required to travel regularly throughout Yukon.

Security efforts are mainly directed toward government buildings, equipment and supplies. Vandalism and theft are of primary concern since the spread out work locations of the government make them vulnerable.

The Emergency Measures Organization was active during May to October, 1979, as a result of the floods in Dawson City. Assistance in post-flood rehabilitation, through membership on the Dawson City Disaster Assistance Committee, was also provided. A mobile radio/telephone-equipped office trailer, designed for use as an advance emergency operations centre, was acquired. A booklet is being distributed to every household in Yukon.

The booklet was prepared containing instructions for guarding against and coping with emergencies.

Directorate of Intergovernmental Affairs

Responsibilities

The directorate provides support services to the elected government leader in coordination of federal and Yukon government activities. Responsibilities also encompass administration of the Secretariat for the Yukon's Federal Interdepartmental Coordinating Committee (FICC) and support services to the General Committee, the Steering Committee and various subcommittees of FICC. The directorate provides Yukon government representation on committees of the federal Advisory Committee on Northern Development.

Review 1979-80

In October, 1979, executive authority for the administration of the Yukon government transferred from the commissioner to a wholly-elected Executive Council (Cabinet) of the leader and four members of the political party with a majority in the Yukon Legislative Assembly. Portfolio responsibilities, including Intergovernmental Affairs, previously held by the commissioner, were taken over by the government leader.

During the year emphasis was on greater coordination of government activities in Yukon. The directorate was a link to bring agencies of government together in the approach to Yukon's development needs and problems. A close liaison was maintained with federal and crown agencies at the local, regional and national levels in all matters affecting Yukon.

The directorate broadened its role in intergovernmental relations and maintained strong and positive relationships with other governments.

Meetings were held during the year with the governments of Alaska, British Columbia, Alberta and the Northwest Territories to deal with matters of mutual interest and concern.

The Federal Interdepartmental Coordinating Committee (FICC), a Standing Committee of the Advisory Committee on Northern Development, held four regular meetings during 79-80. Two special meetings were held to deal with the Treasury Board review of isolated post regulations and to meet with the human rights commissioner. Administrator Doug Bell took over as chairman of FICC. The federal Department of Fisheries and Oceans became a member of FICC in mid-year, bringing total membership to 24.

The Pipeline Subcommittee focused on the concern of member departments for the potential disruption the Alaska Highway Gas Pipeline project may have on their on-going programs. The most significant impact was predicted for the personnel function and FICC representatives were invited to meet with Treasury Board and the federal Public Service Commission to discuss corrective measures.

The FICC subcommittee, formerly known as the Department of Indian Affairs and Northern Development subcommittee, was reconstituted as the Department of Environment subcommittee. It includes Environmental Protection Services, Parks Canada, Canadian Wildlife Service, Atmospheric Environment Service and the Water Survey of Canada. A new permanent subcommittee known as the FICC Housing subcommittee was established and an Interdepartmental Safety Committee, chaired by Labour Canada, operates with a number of FICC member departments. The FICC Training subcommittee is operating under the chairmanship of the Public Service Commission.

The quarterly meetings of FICC were held in Whitehorse, Beaver Creek, Teslin and Mayo. In each case a public meeting with FICC gave members of the public an opportunity to express their concerns. Such public meetings permit public input to the governmental process.

Guest speakers who addressed FICC meetings during the year included officials of the Public Service Commission, Foothills Pipelines (South Yukon), the Northern Careers Program, Supply and Services Western Region, Transport Canada Western Region, Northern Canada Power Commission, Treasury Board, and Human Rights Commission.

Major protocol activities during the year included the annual northern tour of foreign ambassadors, visits of federal and provincial cabinet ministers, the United States Ambassador to Canada, Canada's High Commissioner to the United Kingdom, consuls-general of various countries and other visiting dignitaries.

Plans for 1980-81

The directorate will continue to coordinate government activities and programs in Yukon. It will also continue to foster and maintain cooperative relationships between the Yukon Government and the various federal departments and crown agencies in matters affecting the social and economic development of Yukon. The directorate will remain involved in the work of the Advisory Committee on Northern Development. Intergovernmental relations with other government jurisdictions in areas of interest and concern to Yukon will be maintained and strengthened.

Land Claims Secretariat

Responsibilities

The Land Claims Secretariat is a research unit which develops Yukon Government positions concerning settlement of Yukon Indian Land Claims and the constitutional development of Yukon.

Review 1979-80

Yukon Indian Land Claim negotiations resumed February 12, 1979 and proceeded until August of that year. Land Claims Secretariat staff were members of the government negotiating team in accordance with the federal-territorial agreement on native claims negotiating process for Yukon. The negotiations were interrupted in September, 1979, when the 1973 comprehensive claims policy was reviewed by the federal government. Negotiations resumed in November, 1979, under a new process with the senior federal negotiator a Member of Parliament. Yukon Government participation in the negotiations, however, remained unchanged. Intensive negotiations proceeded until January, 1980, and ended with the defeat of the government in the February 18, 1980, federal election. It is anticipated that land claims negotiations will resume in early June, 1980.

The Land Claims Secretariat continued its constitutional research, placing the settlement of land claims within the overall context of Yukon's development.

Plans for 1980-81

The Land Claims Secretariat will continue to participate in land claim negotiations and undertake further constitutional and land claims research.

Pipeline Branch

Responsibilities

The Pipeline Coordinator's Office, created in 1976 by the Yukon Government to coordinate Yukon activities relative to the planning and construction of the Alaska Highway Natural Gas Pipeline, was elevated to branch status reporting directly to the government leader. Staff of the branch was increased to include a director, an environmental-wildlife assessment officer, a socio-economic-community affairs officer, a financial-taxation officer, a lands-regulatory officer and some research assistants.

Review 1979-80

During the year the branch maintained contact with the Northern Pipeline Agency, the project proponent, and the Northern Pipeline branch of the Department of Indian Affairs and Northern Development to ensure that Yukon's views and concerns were considered in all pipeline-related planning.



Six out of seven nights a week during the summer months the cast of the "Gaslight Follies" performs in the Palace Grand Theatre in Dawson City. Two individual shows reflect the type of entertainment staged during the Klondike Gold Rush.

Branch officials participated in the final review of both the Environmental and Socio-economic Terms and Conditions for Yukon, issued by the Northern Pipeline Agency. As well, the branch socio-economic officer was appointed to a standing group formed to assess and review all company plans required under the socio-economic terms and conditions.

The branch instigated preparation of forecasts for over 30 socio-economic indicators and will use them to determine the impact of the pipeline. Work continued on the development of Yukon Government measures in social and environmental areas.

The wildlife-environmental assessment officer reviewed proposed route alignments and monitored research programs. The branch became involved in government-sponsored research programs, including those involving caribou in the Burwash Uplands and Mt. Michie-Squanga areas. The officer reviewed the Dempster Lateral Environmental Impact Statement and toured that corridor. The branch presented evidence to the Yukon Public Hearings on environmental matters and made numerous appearances before the Yukon Advisory Council.

The branch lands-regulatory officer was in regular contact with the proponent and federal and territorial lands officers to ensure that all approvals and permits were received. In addition considerable work was carried out in relation to right-of-way design and location routing near communities. The officer monitored work performed under land use permits and participated in the withdrawal from disposition of lands in the vicinity of several communities. In addition to his regular pipeline-related duties the officer is a member of the

Federal Territorial Land Use Committee and served as a chairman of the Shakwak Review Committee, which monitors compliance with terms and conditions imposed on the Alaska Highway-Haines Road reconstruction project.

The study continued into the merits of supplying natural gas from the pipeline to Yukon communities. Experts from Alberta and Saskatchewan were invited to Yukon to advise on gas distribution systems. The regulatory aspects of gas distribution were also examined. The branch was involved in preparation of policy and legislation related to industrial and nuisance noise, pipeline taxation and a Yukon heritage fund. Draft legislation is virtually complete and will probably be presented to the Yukon Legislative Assembly later in 1980.

Other areas involving the branch included monitoring of National Energy Board hearings on the gas pipeline project, drafting an administrative agreement between Yukon and the Northern Pipeline Agency and preparing general assessment guidelines for future major development projects in Yukon.

Plans for 1980-81

The branch hopes to see the pipeline taxation and heritage fund legislation approved. It will recommend that surveillance of company activities be stepped up. In addition, the branch will negotiate an administrative agreement with the Northern Pipeline Agency and begin the assessment of company-produced plans required under the Socio-economic Terms and Conditions. The branch will help prepare the terms for a grant of easement to the proponent and continue to gather and evaluate environmental data concerning pipeline routing. A policy regarding distribution of natural gas to Yukon communities will be prepared.

The branch will institute an expanded community liaison program and continue to monitor the activities of both the proponent and the Northern Pipeline Agency in Yukon to ensure that the best interests of Yukoners are protected.

Department of Finance

Responsibilities

The Department of Finance manages the Yukon Consolidated Revenue Fund, keeps official accounting and financial records of the Government of Yukon, processes and pays suppliers' accounts, processes and pays government payroll, prepares and distributes territorial accounts and other periodic financial statements and financial information, collects all taxes and revenues, coordinates budgets and program forecasts, and provides assistance and direction in all financial matters to government departments and agencies.

The department provides financial advice and assistance to the Executive Council and presents the main estimates, territorial accounts and other periodic financial information to the Legislative Assembly.

The department monitors the financial performance of departmental operations and is involved in formulating financial policies, procedures and control in all financial areas of the government.

The Accounting Services Branch keeps official accounting and financial records of the Government of Yukon, processes suppliers' accounts, processes the government payroll and prepares periodic financial statements including the territorial accounts.

The Revenue and Taxation Branch collects and monitors taxes and revenues, handles banking and investments and administers the Heating Fuel Equalization and Home Owners Grants Programs.

The Budget and Financial Management Branch helps develop fiscal policy, provides financial planning, develops and improves financial systems, coordinates the budget process, prepares the main estimates and monitors the financial performance of departments.

Review 1979-80

The department placed considerable emphasis on providing direction and guidance in financial matters to all departments and making more and better financial information available to the Executive Council. The Supply and Services, Data Systems and Computer Services Branches were transferred from Finance to the new Department of Government Services. This enabled Finance to devote more energy to financial matters. Phase I of the Financial Management Systems Development, a new classification of accounts, was operationally effective April 1, 1980. This became a major building block for further improvements to the total financial information package. The government's total insurance needs were reviewed, specifications drawn up and published, and quotations received from brokers. The result was probably the most comprehensive general insurance package the government has ever had.

In the 1979 fall session of the Legislature the 1980-81 capital main estimates were tabled and passed. This enabled preliminary work to be done on major projects over the winter months in order to publish tenders and start work as early as possible in the short construction season. The necessary legislation for Yukon Income Tax was put in place for the 1980 tax year. In addition, the department was involved in financial matters relating to the Alaska Highway Gas Pipeline, examination of the Yukon Electric Rate Equalization Program, and establishment of a reinforced Internal Audit Program.

Financial Statistics

	1979-80 Projected	1978-79 Actual
Revenue, Recoveries, Operating Grants	\$100 400 000	\$92 195 000
Operation & Maintenance Expenditures	84 253 000	73 029 000
Capital and Loan Expenditures	45 210 000	26 041 000

Plans for 1980-81

Undertakings during 1980-81 will include emphasis on continued work on the Financial Management Systems. Further improvements and refinements will be made in accounting and financial administration and control. There will be a review of the financial planning and budgeting process and work on implementing zero base budgeting as a planning, evaluating and budgeting process, will begin. Some form of program evaluation will be implemented and a revised Yukon Electric Rate Equalization Program will be introduced. The Yukon Home Owners' Grant Program administration will improve and work will start on development of improved working capital and cash position information. Financial statement presentation and available financial information to departments and Executive Council will improve and a strengthened Internal Audit Program will be implemented.

Department of Education

Responsibilities

The Department of Education has four areas of responsibility: Elementary and Secondary Education, Adult and Continuing Education, Manpower Planning, and Recreation Services.

Review 1979-80

Elementary-Secondary Education Branch

In September, 1979, there were 5 120 students enrolled in kindergarten to grade 12 compared to 5 222 in 1978. This decline in enrolment is comparable with the previous year and the trend throughout Canada. Additions and renovations to both Watson Lake Elementary and Secondary Schools were completed. Additions and renovations to the Haines Junction School will be completed for school opening in September, 1980. Preliminary work started on a new school for Pelly Crossing, a junior secondary school in Whitehorse, and renovations and additions to schools in both Old Crow and Carmacks. The Yukon Teacher Education Program continued. During the past year the public was permitted to enrol in individual courses. A total of 84 students enrolled either as full or part-time students. The French Language Centre is a resource centre for teachers, students, and the public.

Grants totalling \$411 582 were provided to 233 Yukon students to assist them with post-secondary training in institutions outside Yukon. One hundred and five students received \$168 630 through the Canada Student Loan Program.

A curriculum revision committee of teachers and department staff spent the entire year studying several Language Arts Programs for inclusion in grades 1 - 7. Each program has been tested in the schools, providing first-hand reactions to their suitability for Yukon students. Implementation of a new program is scheduled for September, 1980 or 1981. As a result of a report received in June 1979, on the success of rural students attending secondary schools in Whitehorse, a task force was appointed by the Minister of Education on the advisability of extending grade levels in some rural communities. Also as a result of the report, several initiatives were taken to better cater to the needs of rural students attending school in Whitehorse.

Recreation Branch

The Recreation Branch was actively involved in coordination of the Yukon contingent for the 1980 Arctic Winter Games in Whitehorse, March 16-21. There was a substantial increase in community participation. Through cooperation of the Recreation Branch and the Yukon Association of Non-Status Indians (YANSI), a tour of the Inuit Northern Games was promoted to Yukon communities and schools.

early in the fall, 1979. As a result, Yukon for the first time, took part in the Arctic Sports/Northern Games competitions. The Yukon contingent placed second overall and won the Stuart Hodgson Trophy, for the most sportsman-like contingent.

Recreation Branch consultants assisted community recreation boards to promote a wide variety of recreation programs. The second Annual Recreation Board Members Seminar was held in September. The keynote speaker was Al Miller, Manitoba deputy minister for Fitness, Recreation and Sport. Delegates from Yukon communities took part in the workshops and discussion groups covered such topics as the role of a community recreation board, volunteers, and pipeline impact on recreation services.

The Recreation Branch worked closely with the Yukon Arts Council to promote development of the arts in Yukon. A seminar in December brought delegates from throughout Yukon who agreed that a reorganization of the Arts Council as an umbrella organization for the arts was a necessary first step.

The branch coaching coordinator, together with three theory master course conductors, attended a week-long training seminar held in Ottawa in order to familiarize themselves with the revised program. Theory and technical clinics were offered in Old Crow, Whitehorse and Dawson City. Level II theory was offered in Yukon for the first time.

The Recreation Branch organized a delegation of artists to be Yukon ambassadors to New Brunswick and Nova Scotia, the host provinces, for the Twinning Program and Heritage Festival respectively. Recreation Branch also worked closely with Yukon organizations to welcome the New Brunswick cultural delegation to Whitehorse and Faro.

A Games Management Council was formed to advise government on all matters relating to Canada Games, Arctic Winter Games, and Western Canada Games. One of the first tasks undertaken by this committee was approval of a final "Game Plan" policy outlining criteria to which participating Yukon athletes must adhere.

Plans for 1980-81

During the 1980-81 fiscal year the Games Management Council will assess Yukon involvement in the 1980 Arctic Winter Games and coordinate participation in the 1981 Canada Summer Games in Thunder Bay, Ontario. The Yukon Recreation Advisory Committee, in addition to approving grants to territorial recreation associations, will evaluate the present funding policy. With a recreation board or committee in every Yukon community, recreation in the territory is becoming well developed. Communities are awakening to the recreation-leisure time trends and responding with solid programs which fill the needs of local citizens. In the up-coming year, the Recreation Branch will expand its staff by one to better assist the communities with their recreation needs.

Adult and Continuing Education Branch

The Adult and Continuing Education Branch coordinates programs in vocational education, apprenticeship, industrial, and language training, and basic and continuing education. It also provides General Education Development Testing Services for adults and out-of-school youths.

The research team from the University of Alberta, contracted in October, 1978, to study continuing education needs in Yukon, conducted its study during spring and winter, and reported in September, 1979. The report concluded that: "a community-type college, with its own board of governors, would be the most appropriate agency developing and delivering continuing education programs. Such a college would have a broad mandate, a flexible approach, and a physical presence in all regions of Yukon." The report is being studied and will form the basis of long-term planning for the branch.

Approximately 250 students enrolled in regular full-time pre-employment and diploma courses of five or ten months duration during 1979-80. These courses and programs were supported through the cooperation of the Canada Employment and Immigration Centre. Pre-employment courses were offered in eight trades: automatic transport mechanics, building construction-carpentry, drafting, electrical (industrial), food services, heavy equipment mechanics, heavy equipment operators, welding.

Business education diploma courses provided students with accounting clerk-typists, or secretarial skills. Certified Nursing Assistant Training was given with the Whitehorse General Hospital providing practical experience. Academic up-grading in reading, writing, and mathematical skills was given. Life skills and science were integrated into the academic programs. Additional short courses were offered through the YVTTTC, including a one-week up-grading course for electrical contractors, a one-month outdoor camp cooking course, a two-month pre-trades training for women, a five-year English course for new Canadians, a welding up-grading program for welders from Cyprus Anvil Mining Corporation, a management development course and a chartered accountant course.

Greater emphasis is being placed on night school courses. During 1979-80, a total of 1 026 students enrolled in 76 night school courses throughout Yukon. In Whitehorse, 417 students attended 26 night school courses during the 1979 fall term and 467 attended 37 courses during the 1980 spring term. A total of 142 students attended 13 night school courses in Ross River, Teslin, Faro, Haines Junction, Carcross, Old Crow and Mayo. During the 1979 fall term, 63 students enrolled in six courses while during the 1980 spring term, 79 students enrolled in seven courses.

A pilot project in interactive distance education was possible through the Anik B communications satellite. Programs originating from the University of British Columbia, the British Columbia Institute of Technology (BCIT), the Universities of Victoria and Alberta, were transmitted to Yukon through facilities provided by BCIT in Burnaby, B.C. Twenty-one programs were transmitted in the fall, 1979, and 50 programs in the winter, 1980.

Seven adult basic education programs to the Grade 10 level were offered in Yukon communities. Two programs were offered in Whitehorse and five in outlying communities. The total number of students was 154.

A community Health Representatives Training Program was carried out in cooperation with the Medical Services Branch of the federal Department of Health and Welfare. This program enabled four trainees to receive on-the-job training in public health measures in their own communities. The training was conducted under the supervision of the local public health nurse.

Fifteen students received their certificates from the native para-professional social worker course. The program was designed and carried out through Grant MacEwan College in Edmonton, Alberta. This program was provided through the cooperation of the Department of Education, the Yukon Department of Human Resources, Yukon Native Brotherhood, and the federal Department of Indian Affairs and Northern Development.

An eight-week basic carpentry skills course in Mayo and a ten-week course in Old Crow, are examples of taking programs to people. The success of these courses prompted the residents of Ross River to request a similar 14-week course. This program was initiated with financial support from the Local Employment Assistance Program (LEAP) and Department of Indian Affairs and Northern Development.

The Adult and Continuing Education Branch cooperated with the Government of Northwest Territories to provide field work and accommodation for students of the Renewable Resources Credit Course taught at the Adult Vocational Training Centre in Fort Smith. Members of this class, a number of whom are from Yukon, began field training in Yukon in the spring, 1980.

In 1979-80 a total of 11 people wrote Yukon Tradesman Qualification Examinations and 15 wrote Interprovincial Standard Examinations. Five qualified for Yukon Certificates and three qualified for the Interprovincial Standards Red Seal Certificates. Fifteen apprentices completed their training programs and 14 received Yukon Tradesman Qualification Certificates. Fourteen students qualified for the Interprovincial Red Seal. There are 133 apprentices currently under contract. For the first time, a level III Heavy Equipment Apprenticeship Program was offered at the Whitehorse Vocational Centre. As of March 31, 1980, 615 Tradesman Qualification Certificates had been issued in 10 trades and 89 persons had completed apprenticeships. There were 99 trainees registered under the Canada Manpower Industrial Training Program from March 31, 1979, to April 1, 1980.

The Department of Education continued to search for ways to strengthen the school programs so that high school graduates enter the work world with enhanced skills and stronger career foundations. The Minister appointed a committee to investigate career and vocational education in the schools. This committee, in cooperation with local school communities and the Yukon Labour Council, will report to the Minister in September, 1980.

Plans for 1980-81

A major focus for 1980-81 will be the programming and planning of a new facility for adult and continuing education. A second mobile training unit will also be planned. The Adult and Continuing Education Branch will review and revise the Apprenticeship Training Ordinance.

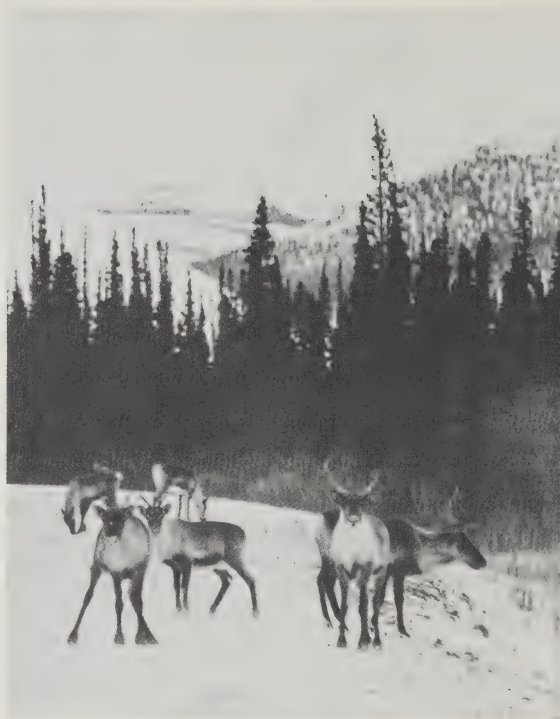
Manpower Planning Branch

The branch provides long-range research, programs, and policy planning on employment and training. It monitors labour force development and is involved in manpower concerns in Yukon. The branch provides secretariat support services to several federal-territorial, industry, labour, and government committees, and works towards improving the status of women in Yukon.

Review 1979-80

During 1979, preliminary research was conducted into the employment barriers faced by people with alcohol and drug-related problems.

Research was conducted into human rights, and Yukon's current Fair Practices Ordinance was reviewed.



Caribou on the Dempster Highway.

In cooperation with the Department of Consumer and Corporate Affairs, a review of the current Labour Standards Ordinance was started.

The branch gathered and published information on union practices and procedures in the building trade unions in Yukon.

So that Yukon residents would receive maximum employment and training opportunities, the branch reviewed existing policies and legislation relating to the Yukon Government's local hire policy. Guidelines were developed to provide Yukon manpower for pipeline construction.

In keeping with government objectives to improve the status of women in Yukon, the branch developed a Matrimonial Property Policy Paper for public comment. This resulted in new legislation, effective January, 1980, governing property rights between husband and wife upon marriage breakdown.

The branch's summer Student Career Employment Program, designed to provide Yukon university students with career-related summer work experience within the Yukon Government departments, was well received.

A course, *Pre-Trades Training for Women*, was offered in cooperation with the Adult and Continuing Education Branch.

The branch assisted a number of other departments with development of related policies, programs, and agreements such as: a Pipeline Employment-Training Plan for Yukon residents, formation of an improved Staff Training and Career Development Program, and an Affirmative Action Program for Yukon Government employees.

The Manpower Planning Branch represented the Yukon Government at various federal-provincial meetings dealing with manpower concerns, revisions to the Unemployment Insurance Act, and women's issues. The Yukon Government is represented by the branch on both the federal Local Employment Assistance Program and Summer Student Employment Program review boards.

Plans for 1980-81

The Manpower Planning Branch will issue a policy paper outlining proposed new Labour Standards legislation. The branch will develop a new Human Rights Ordinance and introduce a course entitled *Employment Orientation for Women*.

Department of Consumer and Corporate Affairs

Responsibilities

Consumer and Corporate Affairs administers five programs: Consumer Services, including labour standards, consumer protection, business and professional licensing; Corporate Affairs, including companies, securities, personal property security and related legislation; Motor Vehicles, including transport public utilities; Metric Conversion; and Occupational Health and Safety.

Review 1979-80

For the year ending March 31, 1980, there were 237 inquiries and/or complaints received by the Department under the Consumer Protection Ordinance and 122 under the Landlord and Tenant Ordinance. There were 165 new complaint files opened under the Labour Standards Ordinance. A total of \$54 786 in outstanding wages were collected.

During the same period, Business and Professional Licences were issued, as follows: Business, 563; doctors, 44; chiropractors, 2; dentists, 12; dental hygienists/therapists, 13; lawyers, 58; optometrists, 2; pharmacists, 8; notaries for government, 56; notaries for private industry, 45; clergymen, 9; scientists and explorers, 36; real estate, 25; insurance, 128; collection agents, 7.

There were 230 licences issued to various organizations to conduct lotteries and games of chance.

There were 280 new companies formed under the Companies Ordinance, including 150 incorporations and 130 extra-territorial registrations. Four companies were restored to the register. Twenty-six companies were removed and 12 were withdrawn from the register. There were 62 name changes and 1484 annual reports registered under the Companies Ordinance. A total of 4288 documents and 433 charges and discharges were registered under the Companies Ordinance. A total of 522 name clearance requests were processed, 1366 searches conducted for the public and 787 letters sent out in reply to various inquiries. There were 232 partnerships and trade names registered under the Partnership Ordinance.

Twenty-three societies and cooperative associations were incorporated and four were restored to the register. Sixteen societies were removed from the register and one changed its name. Under the Societies and Cooperative Associations Ordinance, 124 annual returns and 57 other documents were registered.

One security issuer, five brokers, 11 salesmen and 18 prospectuses were registered under the Securities Ordinance. There were 210 letters sent out regarding regulating requirements, filing and registration exemptions, and trading orders.

The Metric Information Office handles public and government requests relating to all aspects of SI and implementation. General metric seminars conducted by the office throughout Yukon in 1979-80 were attended by 450 persons. Metric construction seminars, offered by expert consultants from Alberta, attracted 120 people. In June, 1979, the Government of Yukon co-hosted a meeting of the Intergovernmental Committee on Metric Conversion in Dawson City. Sixty per cent of Yukon legislation has been converted to metric standards and remaining legislation should be converted in the new year.

A total of 144 Occupational Health and Safety inspections were made. Health surveys for carbon monoxide, nitrogen dioxide, noise, industrial lighting and ventilation were carried out and Health and Welfare Canada was assisted in a survey for control of trace anaesthetic gas (halothane) exposure. Ten safety audits and two examinations on powder actuated tools were carried out and six lectures were given. A discussion paper for an Occupational Health and Safety Ordinance was completed.

A total of 27 579 motor vehicles were registered in the Yukon and 4 712 persons were licensed to drive. There were 649 traffic accidents reported with 149 injuries and eight deaths. The Transport Public Utilities Board, from 191 applications received for operating authority, granted 135, rejected 25, and deferred the remainder.

Department of Health and Human Resources

Health Services

The department administers programs which provide health services to Yukon residents.

The Medical Services Branch of Health and Welfare Canada, in close consultation with the government of Yukon, operates as the territorial public health component. This includes programs in environmental health, public health nursing, mental health, health education, infectious and chronic disease control and a school program. These are carried out through health stations and health centres throughout the territory.

Rehabilitation Services provides services to help disabled adults become independent. Service components entail medical, vocational, educational and social assessments; vocational training; prosthetic and orthotic services and restorative services. Clients are given training at the Yukon Vocational and Technical Training Centre, the Yukon Rehabilitation Centre, on-the-job with Government of Yukon or with private employers. Training programs last from six months to two years.

The caseload for 1979-80 averaged 162 with 42 persons in training, 36 receiving restorative services, 24 receiving prosthetic and orthotic services and 47 receiving placement and follow-up services. The majority of referrals came from Human Resources, 38 percent; physician referrals, 23 per cent; mental health, 14 per cent. The remainder were from families and government departments.

A full-time ambulance service operates from Whitehorse General Hospital. Volunteer ambulance services are in Beaver Creek, Destructive Bay, Haines Junction, Teslin, Watson Lake, Faro, Carmacks, Mayo, Dawson City and Eagle Plains.

Hospitals and medical care is provided through the two insurance plans - Yukon Hospital Insurance Services and Yukon Health Care Insurance Plan. Funding is supplied from general revenue and residents' premiums. Contributions to the cost of both plans are made by the federal government. There is no geographic restriction to services but outside of Canada payment is limited to the Yukon fee schedule.

Vital Statistics from January 1, 1979, to December 31, 1979, showed 510 births, 184 marriages, 115 deaths, three stillbirths, 13 delayed births and one delayed death registration, 34 adoptions, 21 name changes, four legitimations and seven corrections to original records registered for Yukon. During the year, 1563 birth certificates and 128 marriage licences were issued in Whitehorse.

The established pattern of demand for health services in both the hospital and medicare fields remained unchanged. Minor shifts in the emphasis of demand between types of service occurred but none affected the overall picture. The effects of inflation have impacted on hospital operations. Over the course of the year per diem rates in hospitals outside Yukon have risen in the order of 25 per cent, with some 30 per cent of the total patient days attributable to these facilities. Hospital costs in Yukon also rose in the range of 22 per cent.

Recent changes in federal governments delayed the proposed transfer of responsibility for health services. This project is currently in a "hold status" pending determination of its relationship to the Land Claims Settlement.

Yukon Hospital Insurance Program

	1979-80	1978-79	Increase (Decrease)
<i>In-Patient</i>			
Patient Days	25 607	25 804	(197)
Separations	4 269	3 773	496
Average Length of Stay (days)	6.0	6.8	
<i>New Borns</i>			
Patient Days	2 506	2 448	58
Separations	515	520	(5)
Average Length of Stay (days)	4.9	4.7	
<i>Out-Patients</i>			
Diagnostic	13 472	12 908	564
Accident	3 540	3 387	153
Accident (3rd party)	146	139	7
Total	17 158	16 434	724
<i>Costs</i>			
In-Patient	\$5 778 801	\$5 374 586	\$404 215
Out-Patient	382 868	218 166	164 702
Administration	116 077	81 300	34 777
Third Party Recoveries	(4 919)	(9 778)	4 859
Total	\$6 272 827	\$5 664 274	\$608 553
Per capita costs	\$266.92	\$277.03	

Yukon Health Care Insurance Plan

	1979-80	1978-79	Increase (Decrease)
Payments to Practitioners	\$2 735 537	\$2 388 679	\$346 858
Reimbursements	26 908	15 882	11 026
Payments to Dentists	6 734	8 425	(1 691)
Total Cost of Insured Services	\$2 769 179	\$2 412 986	\$356 193
<i>Administration</i>	245 878	213 321	32 557
Total costs	\$3 015 057	\$2 626 307	\$388 750
Per capita	\$128.30	\$105.27	

Human Resources

Responsibilities

Human Resources consists of five program divisions: Field Services, Community and Family Services, Placement and Support Services, Youth Services, and Social Services. An Administrative Section provides support.

The department is responsible for programs and services such as protection of children, adoption, unmarried parents, juvenile probation, senior citizens, social assistance, and counselling to individuals and families. Residential facilities include two senior citizens lodges, seven group care homes for children, and a residential complex for youth. The department provides grants to community-based social service agencies.

A full range of services is available to all Yukon residents - except social assistance to persons of Indian status which comes under the Department of Indian Affairs and Northern Development. Service along the major highways is provided from the department's head office in Whitehorse. There are field offices in Dawson, Mayo, Faro, and Watson Lake.

Review 1979-80

A situational study of the department's information systems showed that improved management information systems were required. A detailed analysis will be completed in 1980-81. The components within the Social Assistance Program were reviewed and a new coding structure was set up for April 1, 1980, to better control and budget social assistance expenditures. The department was involved in planning, supporting and participating in training of Band Social Service Administrators via the Grant MacEwan Community College course for native social service workers.

The Placement and Support Services Division looked after adoptions, group homes, the Receiving Home and Assessment Centre, recruitment and processing of foster homes and placement of children. More emphasis was placed on the recruitment of native adoption and foster homes for native children. The Community and Family Services Division provides counselling service to individuals and families within the City of Whitehorse. Assent was given to a Day Care Ordinance which will enhance the development of day care centres and family day homes.

The Field Services Division provides a full range of services to communities outside Whitehorse. A contract position for a social service worker was established for Old Crow.

The Social Services Division is responsible for social assistance and senior citizens' programs. The Pioneer Utility Grant Ordinance provided \$300 to senior citizens who live in unsubsidized accommodation.

The Youth Services Division permits an increased number of young offenders to return to their communities after only minimal exposure to institutions. Much of this was achieved by the effective use of skills of social workers and probation officers.

Plans for 1980-81

Plans are under way to review the present organizational structure and implement changes to enhance service throughout the territory. A growth of one man year and two contract positions is intended to allow the department to implement its long-range plan of further decentralization of service.

A detailed analysis of departmental requirements of forms and systems is to be completed in 1980-81. The recommendations from this study will determine the direction of the department in developing a management information system. Reviews of the Social Assistance legislation and Child Welfare legislation will continue.

The Department's long-term goal is to increase involvement of communities in the development and delivery of social service programs.

Department of Tourism and Economic Development

Tourism

Responsibilities

Tourism Yukon promotes travel to the Yukon and encourages development of tourist attractions and facilities.

Review 1979-80

Yukon's tourism industry enjoyed another record year in 1979. Border crossings, the prime indicator of visitor volume, decreased by less than one per cent from 1978 to a total of 362 174 persons for the calendar year. Estimated tourist expenditures were up by \$3 million for a 1979 total of \$36 million. Total air transport arrivals showed virtually no change. International air travel dropped 3.7 per cent which indicates there was a small increase in domestic air arrivals. Train travel faltered with a 16 per cent loss in passenger volume, mainly due to the opening of the new road to Skagway, Alaska, and operational problems of the White Pass and Yukon Railway.



Lake trout, like this one, are common throughout Yukon waters. Boat rentals and guide services are available at most major centres.

Of all factors influencing the 1979 tourism industry, the opening of the Skagway-Carcross Road was the most pronounced and created dramatic changes in visitor volume and travel patterns. There was also a significant shift in highway travel modes as automobile volumes for all ports of entry showed a small decrease while buses accounted for an eye opening 133 per cent increase. In comparison with 1978, Yukon visitors appeared to stay for shorter periods. Dawson City hosted fewer visitors and in Whitehorse many visitors resumed trips after a day of sightseeing. A decrease in overnight guests was a factor that reduced hotel/motel occupancy rates in all centers. Mostly, visitor origins corresponded with 1978. California ranked highest among North Americans represented. Although the number of United States visitors represented a smaller percentage of the totals, the Canadian percentage remained unchanged. Visits by Alaskans increased after five consecutive years of decline. Germany was the strongest point of origin for foreign visitors and promises to be one of the Yukon's key tourism markets in the future.

Two new highways, under construction for a number of years, officially opened in 1979. The Skagway-Carcross Road was open from May 7 to October 15 while the Dempster Highway was officially opened in August for year-round operation. These two highways offer the unique experience of driving from the Pacific to the Arctic Ocean.

The territory's two private sector organizations, the Yukon Visitors Association (YVA) and the Klondike Visitors Association (KVA), were active in 1979. YVA concentrated much of its effort on the Cooperative Marketing program in conjunction with the Yukon Government while the KVA devoted most of the profits from its Diamond Tooth Gertie's Gambling Hall operation to two projects in Dawson: completion of the recreation complex (to be used for an expanded gambling hall in future) and stabilization of the Gun and Ammunition Shop, one of the most photographed buildings in Dawson.

There were few construction starts in the industry during 1979. The Sportsman Motel in Watson Lake, which burned down three years ago, was reconstructed with a new main building complex (including lobby, rooms and lounge) at a cost of \$450 000. A study into a first-class 200-room hotel proposed for development in downtown Whitehorse recommended the project be shelved. While these facilities are in demand, the current economic climate and conditions clearly do not favour such a development.

Plans for 1980-81

Cooperative marketing projects will be continued in conjunction with YVA. An interim Tourism Development Agreement was signed with the federal government and a series of projects are planned under this two-year, \$6 million arrangement. Research and planning will be carried out for a longer term development program and there will be more emphasis on economic development and marketing within the tourism industry.

Economic Research and Planning Unit

Responsibilities

In 1979, the Economic Research and Planning Unit became part of the Department of Tourism and Economic Development. The unit's mandate is economic research and planning for Yukon Territory. In-house research, planning and a statistical service are provided to government, the private sector and the public. Service to the government includes the analysis and subsequent advice on matters pertaining to the Yukon's future, particularly in the areas of mining, energy and economic development. The unit publishes a number of regular Yukon reports on rent, real estate, pricing, labour, and overall economic review.

Review 1979-80

During 1979 studies were undertaken covering a wide range of areas including the impact of mining on the economy, population projections, the feasibility of decentralizing vocational education, changing the organization of the Liquor Corporation, employment and unemployment, and economic indicators. The unit was actively involved in monitoring specific large scale development projects and assessing their effects on population and labour. The development of analytical tools, such as the Yukon Economic Impact Simulation Model, gave the unit the capability of generating long-term development strategies for Yukon.

Plans for 1980-81

Plans for 1980 include the signing and implementation of two federal-Yukon agreements on energy. The Canada-Yukon agreement on an Energy Conservation Incentive Program for Commercial, Industrial and Institutional Establishments, is to encourage and assist energy conservation in business. The second agreement, the Canada-Yukon Renewable Energy and Energy Conservation Agreement, will encourage and assist energy saving and demonstration projects. The unit hopes to launch a Business Development Assistance Program this year to diversify Yukon's resource oriented economic base.

Department of Municipal and Community Affairs

Municipal Services Branch

Responsibilities

The branch helps develop local government in Yukon communities and provides a full range of municipal services, including guidance to municipal governments, orderly community planning and land development. The branch promotes quality of life through urban social facilities and utilities.

Review 1979-80

Municipal legislation was reviewed and draft legislation prepared. Discussions on the legislation commenced during the year with the Association of Yukon Communities. Recreational projects carried out under the Community Assistance Ordinance included the Mayo recreation centre, the Haines Junction curling rink-swimming pool complex, and repairs to the Destruction Bay community hall which was damaged by fire. Other projects included water and sewer upgrading in Haines Junction, Mayo and Watson Lake.

Land development continued under a \$9 million program with the major project, the new Hillcrest subdivision, taking place in Whitehorse. Residential lots were developed and made available in Haines Junction and Watson Lake. Acreage residential lots were constructed in Destruction Bay and industrial lots developed in Haines Junction for purchase in early 1980.

A major special project was the new \$8 million Dawson City water and sewer system which will be completed early in 1980. Preparation of a new Taxation and Assessment Ordinance was undertaken and legislation adopted in the 1979 fall session.

The 1979 Mosquito Control Program was conducted using helicopter application for increased accuracy, reducing the number of hectares by approximately 60 per cent without reducing effectiveness.

Plans for 1980-81

This is the final year of funding for the Capital Assistance Program and a review will be undertaken to provide for continuance of the program with a revamped format. Major projects for the 1980-81 season include sewage treatment for Haines Junction and Watson Lake. Recreation projects include completion of the funding for the Dawson City recreation complex and a skating rink for Beaver and Old Crow. Several communities will also get improved garbage disposal grounds.

Carcross and Haines Junction will receive updated community plans. Zoning regulations will be implemented at Destruction Bay and Beaver Creek.

Lands Branch

Responsibilities

The Lands Branch provides administrative management for lands under the control of the commissioner. The principal function is the orderly sale and leasing of community lands.

Review 1979-80

During 1979-80, 135 sales agreements were signed with individuals and builders. There were 127 leases for such diverse uses as recreation and agriculture.

Plans for 1980-81

The Lands Branch expects to be active in the management of quarrying and forest operations. However, the principal activity will be streamlining the land administration system and procedures. The Lands Branch expects that sales of residential land will decrease in 1980-81. However, the federally-operated recreational cottage program will be transferred during the fiscal year, adding significantly to the volume of branch work.

Assessment Services Branch

Responsibilities

The branch provides property assessment services to all Yukon Taxing Authorities by preparing assessment rolls for municipalities and the Yukon government. The branch defends assessments at Assessment Review and Appeal Board hearings. The branch assists the territorial tax collector and provides a real property appraisal service to other government departments.

Assessment values now represent current property values. Assessment comparisons between 1979 and 1980 are outlined below.

<i>Location</i>	<i>1979-80</i>	<i>1978-79</i>
	<i>Assessment Tax Year</i>	<i>Assessment Tax Year</i>
Whitehorse	\$477 674 870	\$179 016 990
Dawson City	18 610 120	7 528 140
Faro	30 826 500	8 119 700
Other Areas	140 334 930	32 275 660

Protective Services Branch

Responsibilities

Protective Services Branch enforces the Building Standards Ordinance, Electrical Protection Ordinance, Boilers and Pressure Vessels Ordinance, Fire Protection Ordinance and Gasoline Handling Ordinance. Ten inspectors and a supervisor of protective services carry out this program.

Review 1979-80

There were 110 fires in 1979, a decrease of 38 from the previous year. Forty per cent of the fires occurred in homes and 41 per cent were covered by insurance. There were 12 injuries and damage totalled \$821 444.

There are 39 licensed electrical contractors in Yukon. There were 819 permits issued to contractors and home owners and 1408 electrical inspections were done.

There were 125 plumbing and gas permits issued. Building permits totalled 329 representing \$12 448 551 in building costs. There were 2008 inspections carried out under the Building Code. The steam boiler inspector, responsible for boilers, elevators, dumb waiters, lifts and tramways, did 170 boiler and pressure vessels inspections. Sixty-three power and steam engineers were certified.

Plans for 1980-81

A study of fire departments throughout Yukon will be carried out this year to determine training and equipment needs for development of a five year plan. The study will be done during routine fire training provided by the Fire Marshal's office.

Department of Justice

Responsibilities

This department provides legal advice and services to the commissioner, members of Executive Council, government departments and agencies of the territory and administers justice throughout Yukon. Programs administered by this department include Compensation to Victims of Criminal Injury, Court Worker Program, Legal Aid, the RCMP contract and the Special Native Constable Program. This department also handles prosecutions under Territorial Ordinances and makes court appearances on behalf of the government and its officers. Additional responsibilities include drafting of ordinances and regulations.

The Whitehorse Correctional Centre provides institutional services for those incarcerated and the Probation Service supervises offenders and prepares court reports.

The Yukon Territory court system includes the Supreme Court, Court of Appeal and Territorial Court. There are Justice of the Peace Courts in most outlying areas while the Territorial Court travels as required. The court system supplies small debt officials and lay juvenile judges. The federal Department of Justice maintains a Crown Prosecutor's office in Whitehorse for prosecution of Criminal Code and federal offences.

The Probation Service has offices in Whitehorse, Watson Lake, and Mayo. During the past year emphasis was on keeping offenders out of institutions. Recently a new position was established of correctional social worker, thus providing a resident counsellor as part of a treatment and classification team. A community work service

program, applied to some field areas, was developed in Whitehorse. This program will be extended to other areas of the territory.

The Whitehorse Correctional Centre, a medium security institution, provides custody and care of both male and female prisoners serving up to two years less a day; detention and care of persons remanded for trial, for sentencing, for immigration and deportation hearings, and awaiting appeal hearings; and for prisoners awaiting transfer to federal or mental institutions. The Correction Centre operates a number of programs designed to facilitate the return of prisoners to society.

A second territorial judge was appointed in the summer, 1979, and one was appointed chief judge. This appointment is expected to improve court services to outlying areas. The Territorial Court instituted a program of upgrading the quality of the work of lay justices of the peace and juvenile court judges.

The Land Titles Office administers the Canada Land Titles Act in the territory. Registers are maintained for certificates of title and other documents such as mortgage and survey plans. The chief coroner administers the Coroners Ordinance and ensures that coroners are available throughout the territory and that their investigations in sudden deaths are carried out promptly and efficiently. The public administrator handles the estates of deceased persons when no one else is available. He also administers estates of persons declared mentally incompetent. In the course of this work the public administrator settles accounts due to or by estates and handles all legal work. The office also acts in legal matters for the benefit of minors. As deputy chief coroner the public administrator is involved in the administration of the Coroners Ordinance. The number of files handled by the public administrator's office continues to increase at an annual rate of 10 per cent.

Department of Library and Information Resources

Responsibilities

The department's two functions include the Yukon Archives and Records Services, which covers archival and records management for all territorial government departments, and library services to the Yukon public and schools.

Review 1979-80

The Yukon Archives was used by more than 5800 researchers and orders for 1900 photographs and negatives were processed by the photographic technician. There were 132 new primary collections accessioned and the imprint collection doubled to over 10 000 volumes with acquisitions and purchase of the Coutts collection.

An oral history seminar and open house during International Archives Week were sponsored. Visual displays and films were presented in many Yukon communities. Records Services began a program of converting records stations to modular shelving which increased capacity, improved efficiency and reduced costs. Increased records activity was evident in that 2341 new files were raised and 56 013 were routed to departments for action.

A central micrographics unit was equipped and staffed and studies were undertaken on various micrographic applications. Library Services Branch has a stock of approximately 150 000 items and distributed 27 517 items to 46 outlets. The branch filled 839 interloan requests including 496 from outside the Yukon. The processing of 12 970 catalogued volumes, 4 557 uncatalogued paperbacks, and 170 uncatalogued audio-visual kits was completed. Whitehorse Public Library circulated 90 233 volumes to show an increase of almost 30 per cent over the past two years. The total circulation in all branches was 142 114. Audio-visual services circulated 10 061 films of that 142 114.

Besides the increase of 15 per cent in circulation in Whitehorse Public Library, reference inquiries increased nine per cent. Some of the more popular programs include story time for pre-schoolers, art shows of Yukon and southern artists, and visits by well-known authors. Also popular was Foxtail - a club for children interested in drama, puppetry, and theatre.

A new position of instructional resources coordinator was introduced to set up operational systems in school libraries and facilitate improved service.

Audio-visual Services installed video recorders in five Yukon communities. Activities in community branch libraries included the Dawson Art Club, the Faro education classes, and Haines Junction's "Echo," a community newspaper.

Plans for 1980-81

Over the long term the Yukon Archives and Records Services will plan future expansion of archives and records management. Description of collections, to provide increased accessibility and conservation of fragile items, will remain priorities.

Further conversion to modular shelving for records stations will take place as funding permits. The Micrographics Unit will film 500 000 Workers' Compensation documents during the year.

Library Services Branch will plan improved delivery of materials and will evaluate rural service. The library plans to open a learning resource centre to integrate delivery of audio-visual materials to the public and schools.

Department of Highways and Public Works

Responsibilities

The department oversees the construction and maintenance of roads and road structures throughout the territory and constructs or acquires and services all Yukon Government properties.

Review 1979-80

A total of 4 399.7 km of roads were maintained and calcium chloride for dust control was applied to 1 342 km. Maintenance of 10 Arctic "B" and "C" airports was carried out under a contribution agreement with Transport Canada. In addition 20 territorial emergency airstrips were maintained on a year-round or seasonal basis. A ferry, operated across the Yukon River at Dawson City, carried 40 217 vehicles and 124 700 passengers during the year compared to 41 063 vehicles and 121 911 passengers in 1978-79. A cable barge over the Pelly River at the settlement of Ross River carried 3 856 vehicles compared to 7 245 during 1978-79. The Dempster Highway opened to traffic to Fort McPherson and Inuvik in the NWT. The road was maintained throughout the winter even though problems were encountered with snow drifting conditions in the Richardson Mountains.

Departmental employees and equipment assisted in the restoration of services after the spring flood in Dawson City.

Vehicle weigh stations operated at Whitehorse, Watson Lake and Haines Junction.

The road reconstruction and paving program of the Klondike Highway continued between the Alaska Highway and Carmacks. Reconstruction was carried out from km 273 to km 292. A paving project, which commenced in 1978-79, was completed between km 224 and km 247. A total of 74 km of the 166 km of road between

the Alaska Highway and Carmacks is now paved. The first of a two-year program to upgrade the Dawson Boundary was completed as 11 km were reconstructed. A number of contracts were let on the Skagway Road section of the Klondike Highway, including those for crushing and road reconstruction. Major grade improvements were carried out in the Beaver Creek section of the Alaska Highway. Construction of the new Tagish Bridge continued and only minor work remains to be done in 1980-81. A sidewalk was constructed at the Yukon River Bridge in Carmacks to provide safe access to and from the Indian village. The Pelly River footbridge at Ross River was repaired.

A number of major projects were undertaken on behalf of the Department of Education. These included school additions in Watson Lake and Haines Junction, additions and alterations to the Van Gorder School in Faro, relocation and installation of a portable school complex at Faro, a school insulation program, renovations and landscaping. Various major and minor building projects were carried out for other Yukon Government departments.

Maintenance of all Government of Yukon buildings was carried out. Property Management operated and maintained a number of administration buildings and office accommodations. Mechanical workshops in Whitehorse and Dawson City and field and camp mechanics serviced all Government of Yukon equipment.

Plans for 1980-81

The various O and M programs of the department will be completed. Reconstruction of a section of the Carcross-Skagway road will continue as will road reconstruction and paving of the Klondike Highway between the Alaska Highway and Carmacks. Upgrading of the Dawson Boundary Road to Alaska Boundary will be done and a multi-year major upgrading of exhaust and heating systems in 24 Grader Stations and workshops will commence. Carcross maintenance camp will be relocated. Construction of a new staff quarter building at Klondike Camp on the Dempster Highway will be carried out and a two-year program to replace drainage structures on the South Canal Road will get underway. Calcium storage buildings will be constructed at various locations.

Department of Renewable Resources

Responsibilities

The Department of Renewable Resources has three branches, Resource Planning, Wildlife, and Parks and Historic Resources. The department seeks the "wise use and management of Yukon renewable resources for the benefit of present and future generations." The present mandate for management covers wildlife, outdoor recreation, historic resources and land use planning. Advice is supplied to the federal government through various committees.

Resource Planning Branch

Responsibilities

The Resource Planning branch plans and guides the use of Yukon's natural resources.

Review 1979-80

During 1979-80, the branch added a resource inventory coordinator and resource economist. Branch activities included the Interim Management Plan for the Dempster Highway plus work on the development of a comprehensive long-term management plan for the Dempster Highway Corridor. Baseline data were organized in preparation for the studies to be conducted on surficial geology, wildlife, vegetation and forestry inventories. Regional planning was initiated for the east Kluane area. The Resource Planning Branch assisted Parks and Historic Resources Branch to formulate a draft concept plan for the Yukon River Agreement for Recreation and Conservation. A concept plan for the development of a regional park area at Chadburn Lake, which was a Yukon-Whitehorse cooperative plan, was also undertaken.

The branch was involved in development of procedures for safe management of hazardous wastes in western and northern Canada plus the preparation of environmental impact assessment guidelines for Yukon. Work on a background paper on the territory's fishery resources is under way and an active role has been taken in the Forest Research Advisory Committee.

A number of policies and programs were initiated covering development of an agriculture policy suited to Yukon's needs and circumstances, formulation of a cottage lot and recreational lands policy, and public participation program design guidelines.

The branch implemented the territorial government's responsibilities for the Canada-Yukon Special Rural Development Agreement. The administration of this program has been transferred to the Department of Tourism and Economic Development. The Wildlife Branch was assisted with development of a Trappers Assistance Program and a preliminary survey of the business of trapping was initiated.

The branch led the planning role in cottage lot development to facilitate the transfer of the recreational lands and responsibility from the federal government.

A biophysical inventory program was initiated under Program I of the Canada-Yukon Subsidiary Agreement on Renewable Resource Development. All plans and projects were identified for implementation over the next three years. In conjunction with this program a biophysical inventory workshop, held in Whitehorse in October, brought together a number of experts from across the country.

Plans for 1980-81

On-going projects for the up-coming year include east Kluane regional planning, Dempster Highway Corridor planning, cottage lot development planning, agriculture policy implementation, background studies of fisheries and other renewable resources, and the biophysical inventory.

Wildlife Branch

Responsibilities

The Wildlife Branch administers and enforces the Game Ordinance, Fur Export Ordinance, Brands Ordinance, Pounds Ordinance, Migratory Birds Convention Act, Canada Wildlife Act, International Agreement on the Conservation and Management of Polar Bears, International Agreement on Trade of Endangered Species of Flora and Fauna, Game Export Act, and the Freshwater Fisheries Regulations. It also conducts various research and educational programs for wildlife resource management.

Review 1979-80

The environmental protection biologist was seconded to the Yukon Government's newly established Pipeline Branch.

Two native people participated in the Wildlife Branch native training programs, financed through the Department of Indian Affairs and Northern Development. Annual monitoring continued of sheep, goat and moose populations in the southern Yukon, particularly close to population centres. The skulls and lower jaws of all sheep, goat and grizzly taken by hunters in 1979 were inspected and measured. Detailed questionnaires were sent to all hunters to establish harvest statistics. A study of grizzly populations was initiated which included field work in the Ogilvie Mountains, monitoring of garbage dumps, and accompanying outfitters in the field. A number of big game studies partially funded by Foothills and carried out by the branch, will assess potential impact of the proposed pipelines. These studies included caribou, falcon and grouse work along the Alaska Highway pipeline route and caribou, sheep and falcon work along the Dempster lateral pipeline route.

The study of the Porcupine caribou herd continues. Two technical people work on this project in the northern Yukon in summer and along the Dempster in winter. Supplementary funding for Dempster Highway-related work on caribou and falcons was obtained from the Northern Roads and Airstrips Division of the Department of Indian Affairs and Northern Development. Waterfowl and falcon research in the northern Yukon continued. Experiments were initiated on re-introductions of falcons into depleted areas. Monitoring of certain ptarmigan populations continued. Considerable effort was spent to upgrade the reporting system on furbearer harvest and trapline administration.

The fur section of the branch continued its research on marten, beaver and wolverine. Habitat analyses work concentrated on the winter range of the Porcupine caribou herd and on marten biotype assessment. A hunter safety course, initiated in 1974-75, was expanded and taught in a number of Yukon schools. The Wildlife Branch continued to teach students firearm safety, first aid, outdoor survival and principles of game management at the outdoor camp at Kluane Lake.

Plans for 1980-81

Most of the projects carried out in 1979 will continue through 1980-81. New projects will be limited to administrative matters such as computerizing the licensing and permit-granting system. Some studies, such as the grizzly bear management program and a moose project along the Yukon River, will be carried out in more detail. Falcon inventory work will shift to the Wernecke Mountains and sheep inventories will be carried out in the western Ogilvie Mountains, close to the U.S. border. Funding was obtained from the North American Foundation for Wild Sheep to carry out an investigation on horn deformities in dall rams in the Kluane Lake region.

Parks and Historic Resources Branch

Responsibilities

Parks and Historic Resources Branch, created in June, 1978, plans, develops, manages and administers outdoor recreational areas and historic sites. The branch maintains 65 sites and areas in three districts throughout Yukon.

Review 1979-80

The signing of a General Development Subsidiary Agreement in 1979, containing a recreation and tourism facility construction program, allowed the branch to expand its field program. The identification and implementation of 13 projects under this sub-agreement provided for extensive site planning and public participation prior to the development of campgrounds at Lapie River, Congdon Creek, Marsh Lake, Kusawa Lake and along the Dempster Highway. Rehabilitation and expansion of the existing campground system continued. Plans and specifications for a new workshop, to be located in Whitehorse, were prepared and tendered.

An interim management program along the Yukon River continued. This program, and the preparation of a concept plan for longer term management, were undertaken in cooperation with the ARC Branch, Parks Canada. The concept plan will serve as a negotiating document for a long term ARC Agreement between Parks Canada and the Yukon Government. A Tourism Development subsidiary agreement, signed in early 1980, identified a project to stabilize and protect historic structures that presently serve as tourist attractions along the Yukon River. This project will begin in 1980.

During the year, a historic resource officer began preparation of a comprehensive Yukon Government Historic resource policy. A Park Ordinance was approved during the fall legislature and proclaimed to come into force on January 1, 1980. This ordinance essentially enables legislation for the controlled establishment of a territorial park system. The drafting of comprehensive planning and operational policy was undertaken during the year. It is expected the legislative, planning and operational policy will serve as the basis for long-term development of Yukon parks.

Plans for 1980-81

During 1980-81 certain projects undertaken in 1979-80 will continue under the subsidiary agreements. Several new campgrounds will be developed at Million Dollar Falls, Snag/Beaver Creek, Watson Lake and along the Dempster Highway. Policy will be prepared for a Highway Point of Interest sign program.

During the new year a thorough review of the branch long-term goals and objectives will be undertaken as a result of changing visitor and resident travel modes and recognition of fiscal restraint.

Department of Government Services

Responsibilities

This department coordinates general service agencies for the various departments within Government of Yukon. The three main branches are Systems and Computing Services, Supply Services and the Public Affairs Bureau.

Systems and Computing Services

Responsibilities

The branch provides information systems consulting, analysis, design and development services as well as a central data conversion and computer processing facility for the Government of Yukon. Responsibility was assumed for all government word processing activities.

Review 1979-80

Five application systems were developed and redeveloped and the computing and systems resources were evaluated.

Plans for 1980-81

Plans for 1980-81 include upgrading of the computing facility, establishment of word processing capabilities for many departments and reducing the systems development backlog.

Supply Services

Responsibilities

The branch oversees government purchasing, printing, warehousing, transportation, asset control, central and stationery stores, mail services and telex-dex communications.

Review 1979-80

During the year purchase orders were issued for \$12 million; service contracts for \$6.5 million; and local purchase orders for \$1 million.

Seventy per cent of all purchasing activity was contracted to Yukon business. A new forms management program was instituted in the printing section and a formal Yukon Gazette developed for implementation in May, 1980. A major transportation study was completed, recommending overall changes in policy and procedure directions. An asset control audit was completed, affecting procedural and control practices and adopting revised methods for the disposition of seized items. There were 19 surplus sales, the largest of which accrued \$122 000.

Plans for 1980-81

A systems contracting procedure will be incorporated in existing purchasing policies and a new commodity catalogue will be established. A chargeback system for printing services is being established. The Central Transportation Agency will adopt more efficient control over government employee travel costs and the operation of the government car pool.

Public Affairs Bureau

Responsibilities

The bureau informs the public about Yukon Government activities, programs and services. It fulfills this function through news releases, advertisements or advertising campaigns, publications, slide shows, exhibits, photography, feature stories, news conferences or radio and television interviews. The Yukon Government Inquiry Centre in the Territorial Administration Building operates under this branch.

Review 1979-80

In addition to numerous reports, books, pamphlets and slide shows, the public affairs bureau issued 317 news releases and coordinated a visual identity program. The Yukon Government Information Office in Vancouver handled 5 672 inquiries for the fiscal year before it was closed on March 31, 1980, because of spending cutbacks. The Inquiry Centre in Whitehorse dealt with 123 177 inquiries including 61 785 by telephone and 4 469 by mail.

Plans for 1980-81

Negotiations opened in early 1980 on cost sharing of the Inquiry Centre by the federal government. These negotiations will continue.

Yukon Workers' Compensation Board

Responsibilities

The Workers' Compensation Board administers the Workers' Compensation Ordinance and adjudicates all matters arising under that Ordinance. The financial responsibility of the board is threefold:

- it must guarantee that compensation and pensions awarded to injured workers on their dependents be paid according to entitlement as long as required;
- it must collect from employers sufficient funds to meet these obligations;
- it must keep the cost to employers at a minimum while achieving maximum stability of assessment rates.

Review 1979-80

A total of 1778 claims were reported to the board during 1979 compared with 1706 in 1978. Increases in the amounts of compensation resulted from Section 79, whereby the amount of compensation is increased in accordance with changes in the Consumer Price Index. The amount of the increase at January 1, 1979, was nine per cent.

During 1979 there were 1347 employers registered compared with 1451 during 1978. In 1979 the yearly maximum remuneration for workers increased from \$17 000 to \$19 000.

Yukon Liquor Corporation

Responsibilities

The Liquor Corporation regulates importing, distributing and retailing of all alcoholic beverages within Yukon. The corporation ensures that the requirements of the Liquor Ordinance and the attendant regulations are upheld. The corporation has authority to issue, cancel or suspend liquor licences.

Review 1979-80

Administration

The Administration Branch was involved with the review and compilation of an inventory of services, assessment of all drug and alcohol related programs, and formulation of recommendations to the Standing Committee on Drug and Alcohol Related Problems in Yukon. The branch's role as coordinator for the review was at the request of the parent committee and in line with the goals and objectives of the corporation.

New regulations under the Liquor Ordinance were made and changes in the Ordinance were passed by the Territorial Council. A plebiscite in Old Crow ascertained that residents did not wish to prohibit liquor.

The Liquor Board added two members during the year for a total of five. There is now good representation on the board from all points in the territory. There were five Liquor Board meetings during the fiscal year and nine hearings into applications for new licences. Negotiations with the B.C. Breweries on beer pricing policies took place.

Operations

There are six Liquor Stores in the territory, located at Whitehorse, Dawson, Mayo, Faro, Haines Junction and Watson Lake. All of these outlets are served from the Central Warehouse in Whitehorse. The Central Warehouse contains a Licensed Outlet Store for dispatching liquor orders to licensee operations in Whitehorse and points along the highway.



The modern public mall of the Territorial Administration Building in Whitehorse, Yukon. Housing territorial employees the building was opened May 25, 1976, by His Excellency Governor-General Jules Léger.

Liquor sales, including surcharge during 1979-80 were:

Spirits	\$4 987 622
Wine	1 561 971
Beer	4 016 997
Total	\$10 366 630

There were 829 special occasion permits and 125 reception permits issued during the year.

A total of 7 110 tons of liquor was handled and 572 000 dozen empty beer bottles were returned. Liquor consumption amounted to 805 021 gallons. There were 588 I.D. cards issued.

The Whitehorse Liquor Store hours were extended to 9:00 p.m. Friday nights.

Accounting Branch

Complete financial and accounting responsibilities are now carried by the corporation. The corporation is subject to audit by the Auditor General of Canada. The Third Annual Report will be tabled at the next session of the Territorial Council.

Licensing and Inspection

The following liquor licences were issued during 1979-80: Liquor cocktail lounge, 46; beer tavern, 11; dining room, 32; restaurant beer and wine, 34; liquor off premises, 61; beer off premises, 31; club liquor, 8; beer canteen, 4; special liquor, 6; aircraft liquor, 2; room service liquor, 19; mess liquor, 2; total, 256.

There were eight applications for new licences. No suspensions of liquor licences occurred during the year. A total of 1648 visits were made on licensed establishments and 554 liquor permits issued to the public were supervised by the chief liquor inspector.

Plans for 1980-81

Intensive review of a Point of Sale System will take place toward providing better service to the public. Development will be gradual. Each phase will have separate cost justification prior to implementation. All liquor stores will remain open during lunch time.

Selections of new brands of liquor, beer and wine, according to demand and public acceptance, will continue. On-going liaison with licensees, the RCMP and other agencies will help control the sale of liquor, assist licensees where possible and decrease abuse of alcohol in Yukon. A "Walk Through" program with the RCMP will be instituted.

The alcohol coordinator has completed his study of ways to coordinate all drug and alcohol programs. The recommendations of his report will be reviewed by the subcommittee for presentation to the standing committee and the Yukon Government.

Yukon Housing Corporation

Responsibilities

The Yukon Housing Corporation develops, provides and operates housing projects and programs. The corporation's client group extends to many segments of the population, including low and modest income individuals, families, senior citizens and staff of the Yukon Government.

Review 1979-80

Construction of a 36-unit senior citizens' apartment block in Whitehorse commenced in the fall, 1979, and is due for occupancy in the summer, 1980. No other construction was carried out during the past year though some major upgrading was done on a number of units. A survey of existing insulation in all of Yukon Housing Corporation's community and staff housing was completed and a proposal for a five-year retro-fitting program is being developed.

Plans for 1980-81

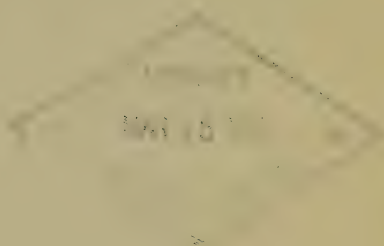
A senior citizens' fourplex is being constructed in Watson Lake with occupancy set for September, 1980. A similar building is planned for Mayo. The corporation has continued to sell a number of houses to both government staff and the public in an on-going effort to encourage stability in Yukon communities through private home ownership. ■



1980-1981
Government
Activities in the
North

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1980-1981 Government Activities in the North

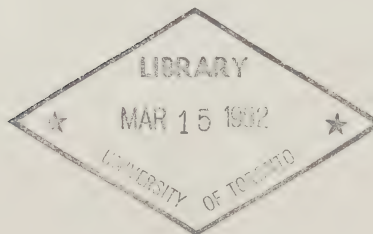
1980-1981 Report and 1981-1982 Plans
Advisory Committee
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Cette publication peut aussi être obtenue en français



As Minister charged with the responsibility for co-ordinating government policy and its application in the North, I am pleased to present the 1980-81 edition of *Government Activities in the North*. This publication continues to be of great value to researchers and others who want to keep themselves informed about the role of government in Canada's North, as it is the only available consolidation combining reports of both federal and territorial government activities in the Yukon and Northwest Territories. The department of Indian Affairs and Northern Development compiles and produces this valuable resource tool on an annual basis.

To describe the government's role in the North as clearly as possible, this report is in narrative form. A companion publication entitled *Annual Northern Expenditure Plan*, also published by my department, indicates the level of expenditures applied against various categories relating to the government's Northern objectives. Taken together, *Government Activities in the North* and *Annual Northern Expenditure Plan* record the nature and extent of governmental activities in Canada's North.

The Honourable John C. Munro
Minister of Indian Affairs and
Northern Development.

The 1980-81 edition of *Government Activities in the North* is published in both official languages by the Advisory Committee on Northern Development.

This publication reports annually on government activities in the Yukon and Northwest Territories. In this report, federal departments, agencies, crown corporations and both territorial governments, outline northern responsibilities, review past year's activities and project plans for the fiscal year 1981-82.

Much of the material used under *Plans for 1981-82* had to be assembled in the latter part of the fiscal year 1980-81. By the time this publication is released, many of these will be accomplishments, while others will have been modified or abandoned. As a result, they are treated throughout as being in the future.

Government Activities in the North is a companion report to the publication *Annual Northern Expenditure Plan 1981-82*. Together they form a complete source of information on all aspects of government activity in the North.

Both these publications are available from the Publishing Division, Department of Indian Affairs and Northern Development.

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Advisory Committee on Northern Development

ACND

Responsibilities

The ACND provides the mechanism for interdepartmental planning and coordination of federal policies and programs pertaining to the Canadian North.

The ACND reports to the Minister of Indian Affairs and Northern Development through its chairman, the deputy minister of the department.

Principal ACND committees and their chairmen are:

Policy

P.M. Tellier, Department of Indian Affairs and Northern Development

General

J.C. Tait, Department of Indian Affairs and Northern Development

Transportation

J.J. Seguin, Transport Canada

Science and Technology

Dr. A.E. Collin, Department of Energy, Mines and Resources

Northern Communications

D. Rainboth (Acting), Department of Communications

Federal-Territorial Economic Planning

G.N. Faulkner, Department of Indian Affairs and Northern Development

Advisory Committee on Industrial Benefits from Natural Resources Development

G.E. Hughes-Adams, Department of Industry, Trade and Commerce

Federal Interdepartmental Coordinating Committee - Yukon

D. Bell, Commissioner

Northwest Territories Coordinating Committee

J. Parker, Commissioner

Interdepartmental Advisory Committee on Northern Roads

D. MacKinnon, Department of Indian Affairs and Northern Development

Federal Territorial Regional Planning

Co-chairmen, D. MacKinnon, Department of Indian Affairs and Northern Development; L. Elkin, Government of the NWT

Information on the terms of reference for each committee is available through the ACND Secretariat.

In addition, working groups, which report to the principal committees, are formed as required to deal with specific tasks or projects. ■

Responsibilities

Agriculture Canada provides technical advice in the North on agricultural production, soils and vegetation, research and consultative services for insects, diseases and plant fauna.

Review 1980-81

Agriculture Canada increased its activity in field work on soil inventories in both the Yukon and Northwest Territories. Monitoring of soil temperatures was extended in the high arctic soil region.

Surveys of vascular plants, fungi and insects were extended over a large part of the territories to classify the fauna of the region.

Land Resource Research Institute

Review 1980-81

The monitoring of soil temperatures continued at eight sites in the Inuvik-Arctic Red River area to characterize the soil temperature regime, the thermal regime of the active layer, and the high subarctic soil climatic region.

At the request of the Department of Indian Affairs and Northern Development, cooperation began in 1980 between Land Resource Research Institute and the Land Resource Inventory group established in the Yukon Territory. This resource inventory program in the Yukon is aimed at expanding both the renewable resource information base, particularly in high priority areas, and the Government of Yukon Territory's capability for future land use planning and management. The Land Resource Research Institute's contribution to this project was in soil correlation, technical expertise in northern land resource inventories, and laboratory analysis of the 280 soil samples collected during the field season.

Biosystematics Research Institute

Review 1980-81

A group of four entomologists and pathologists carried out extensive surveys of insects, fungi and vascular plants in Yukon. A number of scientific papers were published, including the book *Vascular Plants of Continental Northwest Territories*. ■

Canada Employment and Immigration Commission

CEIC

Northwest Territories

Review 1980-81

The Canada Employment and Immigration Commission provides services to the Northwest Territories through Canada Employment Centres (CECs) in Yellowknife, Hay River, Inuvik and Frobisher Bay. Full time sub-offices are maintained at Fort Simpson, Fort Smith and Rankin Inlet. In addition to the CECs there is also an Employment Development Branch in Yellowknife which administers a variety of programs in the NWT.

A full range of unemployment insurance programs are available from both Frobisher Bay and Yellowknife. From April 1, 1980, to February 28, 1981, a total of 2 985 claims were received from NWT residents.

The Yellowknife Canada Employment Centre, — responsible for about two-thirds of the NWT — has a staff of 32, and its branch offices serve about 30 settlements with a total population of more than 24 000. Services are largely directed towards the government offices in the capital city and the major mines, including two large gold mines in Yellowknife.

The CEC in Hay River with a staff of five, is responsible for a labour market area of approximately 48 000 km with a population of approximately 6 500. During the past year the CEC concentrated on employer needs in four major communities with emphasis on the transportation and mining industries.

The CEC in Inuvik, which has a staff of seven, is responsible for an area of approximately one-sixth of the NWT and serves about 12 settlements with a combined population of approximately 7 300.

The CEC at Frobisher Bay, with a staff of six, is also responsible for one-sixth of the area of the NWT. It serves approximately 24 settlements with a combined population of more than 8 000. The staff is concerned with employment in the Baffin Region and the development of a new lead-zinc mine at Strathcona Sound.

From April 1 to February 28, 5 234 new registrations were recorded in the NWT. In addition, there were 5 138 registration revivals. In an effort to find work for these individuals, the CECs made 9 163 referrals to 5 386 vacancies. More than 3 800 placements were made.

During 1980-81 the Employment Development Branch spent approximately \$2.37 million through a variety of programs which created 735 jobs. Under the Canada Community Development/Services Projects Programs, \$394 733 was spent creating 132 jobs ranging from logging to health care, teaching and training.

Approximately \$1.5 million was spent under the Local Employment Assistance Program to provide funding for 28 projects which created 246 jobs in areas such as logging, sewing, baking, and so on.

Under the Summer Youth Employment Program, \$435 825 was spent to provide work for 354 individuals involving 48 projects.

Under the New Technology Program, three projects were funded at a cost of \$12 000. This resulted in the creation of three jobs in research and analysis (e.g., biology, oceanography).

The Canada Manpower Training Program is administered under an agreement between the commission and the Government of the NWT. The latest agreement, signed May 2, 1978, expired March 31, 1981.

During the fiscal year, the commission purchased 48 000 training days from the Department of Education, Government of the NWT, to provide skill development for 314 trainees, apprenticeship for 220, and academic upgrading for 125 persons.

In addition, 225 contracts were signed under the Canada Manpower Industrial Training Program, providing training for 693.

Under the Canada Manpower Mobility Program, assistance was authorized for 20 workers to search for employment outside their areas of residence; 12 persons were relocated to employment and 71 persons were given special travel assistance. Total expenditure for this activity was \$23 000. Also authorized were exploratory assistance for one person and relocation assistance for eight persons looking for or accepting work in the Northwest Territories.

During 1980-81, Outreach programs operated in Baker Lake, Eskimo Point, Fort Liard, Fort Resolution, Igloodik, Wrigley, Pond Inlet, Pangnirtung, Fort Providence, Cambridge Bay, Tuktoyaktuk, Rae-Edzo, and Yellowknife. A total of 13 Outreach workers were located in the NWT.

Plans for 1981-82

The program will continue to establish good working relationships with the Government of the Northwest Territories and other federal departments. In addition, an aggressive plan will be implemented to promote Manpower Planning.

Yukon Territory

Review 1980-81

The commission focused on the maintenance and improvement of services to all areas of Yukon. In addition to the activities undertaken by Whitehorse-based staff, Outreach workers continued to provide employment services to their local labour forces.

Through personal visits to employers, liaison with employer organizations and communities and publicity programs, employers were encouraged to upgrade their work force through training, and develop methods to ensure maximum use of Yukon labour.

Canada Manpower Consultative Service activities continued with the Yukon Labour Force Development Council under a Manpower Assessment Incentive Agreement. This initiative, with representatives of industry, unions and the Government of Yukon, determines ways in which Yukon labour force can participate more fully in existing and potential growth.

The Canada Employment Centre for Students operated from February to September, 1980. The graduate student manager contacted all post-secondary Yukon students regarding their summer employment needs and identified suitable employment opportunities. In addition, two undergraduates provided assistance to Yukon secondary students through visits to potential Yukon employers, secondary schools, short courses on job search techniques and public relations. During the 1980 program, 824 students registered for employment and 556 were placed.

A native employment specialist assisted in the application of all CEIC programs to the native segment of the labour force.

Canada Manpower Training Program activities continued in virtually all courses offered by the Yukon Territorial government through the Yukon Vocational and Technical Training Centre in Whitehorse and outlying communities. During 1980-81, approximately 40 000 training days were purchased under the Adult Occupational Training Act Agreement. This included basic training for skill development, skill full-time and skill part-time. In addition, a small number of trainees were referred to southern training institutions, primarily in British Columbia.

The Canada Manpower Industrial Training Program provided financial incentives to employers who hired and trained unemployed and special needs workers and who upgraded the skills of those already employed. A total of 211 individual contracts was involved in this training program. Two major Critical Trades Skill Training contracts were negotiated with mining companies. This involved identification and hiring of 29 additional apprentices in the heavy duty mechanic, industrial electrician and millwright trade areas.

The Canada Manpower Mobility Program helps workers explore and relocate to jobs, accept temporary jobs in other areas, travel to Canada Employment Centres for services not available in their home areas and travel to training courses. During the year, three temporary employment grants, 10 exploratory grants and seven relocation grants were authorized in Yukon.

Employment and Insurance operations included 10 085 registrations for employment, 9 463 referrals to employment opportunities and 2 573 placements. In addition, 453 visits were made to employers. Insurance operations processed 3 549 claims for unemployment insurance benefits.

The four community-based Outreach projects at Watson Lake, Haines Junction, Dawson City and Mayo functioned successfully during the year.

The Employment Development Branch completed Cycle IV — the final cycle — of the Canada Works Program. There were nine projects which created 32 jobs for 475 work weeks of employment. The federal financial commitment was \$98 914.

The 1980 Summer Youth Employment Program funded 60 projects creating summer work for 297 students. The value of these projects was \$542 055.

The Yukon allocation for Summer Canada '81 is \$438 414. Development work and review was largely completed by March 31, 1981. Summer Canada '81, as in 1980-81, replaces all previous internal and external Youth Employment Programs offered by the federal government.

The Local Employment Assistance Program (LEAP), which provides funds to develop long term jobs and employment opportunities, approved projects which cost \$516 980 during the year. Carry-over into 1980-81 is included and many will require additional funding in future fiscal years.

Canada Community Development Program, designed to support local organizations in the development and management of activities that will create short term employment opportunities on community based projects, contributed to the maintenance or expansion of ongoing employment opportunities in areas of high unemployment. A total of 15 projects were approved creating 62 jobs on a federal financial commitment of \$271 300.

Canada Community Service Program was designed to create jobs in the field of community services and particularly in activities dealing with women, native people and immigrants. This long term employment initiative funds projects over a three-year period. Eight projects were approved creating 32 jobs. The federal financial commitment was \$113 929.

A New Technology Employment Program, designed to provide jobs for technical and scientific post-secondary graduates who have been unable to secure employment, approved two projects with a federal financial commitment of \$14 080.

Time and effort continued to be directed toward Manpower Planning for the proposed Alaska Highway Gas Pipeline and the Shakwak project.

The Canada Immigration Centre in Whitehorse operated on a year-round basis and the Canada Immigration Centre in Beaver Creek operated from May to September.

Immigration operations included enforcement and control activities throughout Yukon. There were 4085 people referred for secondary examination at the points of entry and 101 were found to be inadmissible and refused entry to Canada. In addition, 960 people were investigated inland and 163 were subsequently removed from Canada.

Resettlement of Indo-Chinese refugees in Yukon has progressed satisfactorily with more than 60 refugees settling under private and government sponsorship. Settlement services have included English language training, counselling and intensive family support services by Yukon Lifeline and Commission staff. ■

Canada Mortgage and Housing Corporation

CMHC



Demonstration House, Rankin Inlet, NWT

Responsibilities

Canada Mortgage and Housing Corporation (CMHC) is responsible for housing and other programs under the National Housing Act. It insures residential mortgage loans made by approved lenders and provides direct financing to the territorial housing corporations and private non-profit organizations or new construction as well as the rehabilitation of existing houses. The day to day activities are administered by branch offices in Whitehorse and Yellowknife.

Review 1980

Yukon

This was the second year of full operation for the Whitehorse Branch Office. During the year, three programs were introduced that had not previously been delivered in the Yukon. Houses were built for homeownership for the first time in three communities under the Rural and Native Housing Program. A project of ten single family houses was financed under the Urban Native Housing Program in the City of Whitehorse, and activity commenced in the Rural Residential Rehabilitation Program to assist in the repair and improvement of existing substandard housing.

During 1980, 102 housing units were financed under the National Housing Act, including 81 for homeownership and 21 or rental to low and moderate income families. Under the Canadian Home Insulation Program, 214 grants worth \$78 600 were made to homeowners to assist them in upgrading the insulation in their homes.

The council of Yukon Indians (CYI) helped CMHC deliver programs to native people. This included financing of \$214 000 for four new houses for homeownership, and emergency repairs to 25 existing substandard houses with grants totalling \$35 000. A Sustaining Grant of \$73 000 was made to CYI for its continuing support of housing programs.

Northwest Territories

During 1980, 363 housing units were financed under the National Housing Act. Of these, 310, were financed directly by CMHC to the Northwest Territories Housing Corporation (NTHC) while the remaining 53 were NHA insured loans for owner occupancy. The NTHC program was directed towards subsidized rental housing in many of the smaller and isolated communities in the territories, including the provision of 106 new units and the major rehabilitation of 204 existing houses. The new construction program included a special demonstration project of seven units, one each in seven communities in the Keewatin Region. Energy-conserving features and technology were incorporated in these units, and people from the communities participated at the design stage and will be involved in the ongoing monitoring work. CMHC funding to the NTHC in 1980 totalled \$13.5 million. Under the Canadian Home Insulation Program, 138 grants worth \$62 000 were made to homeowners to assist them in upgrading the insulation in their homes.



Public Housing, Frobisher Bay.

CMHC and NTHC jointly sponsored a Regional Housing Conference for the Baffin Region which was held in Pangnirtung. This conference brought together people from the smaller communities who are involved in the management of public rental housing. It provided an opportunity to exchange information, identify problems, and propose solutions in an attempt to improve housing conditions and management techniques. The conference was attended by 71 people, with representatives from 13 Baffin communities, NTHC, CMHC and the Inuit Non-Profit Housing Corporation. Four similar conferences have been held in other regions of the territories during the past three years. Two more are planned for 1981.

A special Emergency Repair Program was undertaken by CMHC and NTHC during the year. A total of 54 of the older Northern Rental units in a number of smaller communities were upgraded and made more energy efficient. CMHC's contribution was \$200 000.



Public Housing, Holman Island, NWT

The Mackenzie Valley Housing Association helped CMHC deliver native housing programs in the Mackenzie District. A Sustaining Grant of \$190 000 was made to the association during 1980. Another Sustaining Grant of \$127 000 was made to the Inuit Non-Profit Housing Corporation to help it represent the Inuit population north of the tree line.

It is expected that the efforts of this group will show significant results in 1981, with projects in Tuktoyaktuk, Eskimo Point, Cape Dorset and Lake Harbour.

Total Activity Approved — 1980

	No. of Units	Amount \$000
Yukon (New and Existing)	105	5 071
(Rehab and Repair)	25	35
NWT (New and Existing)	159	11 058
(Rehab and Repair)	258	5 200

■

Canadian Broadcasting Corporation

CBC



Remote broadcast from Aklavik, NWT, on Inuvik radio's 20th anniversary.
CBC broadcasters are Sarah Ann Gardlund (left), Mary Huskey (center) and
Roger Gruben (right).

Responsibilities

The Northern Service of the Canadian Broadcasting Corporation was established in 1958 to provide a broadcasting service to meet the special needs of Northerners - Inuit, Dene, Metis, and non-native.

Radio

There are five radio production centres in the North, each preparing programs for culturally and linguistically distinct audiences. Yellowknife, NWT, is the program centre for the Mackenzie region; Inuvik, for the Delta; Frobisher Bay for the Baffin; Rankin Inlet for the Keewatin; and Whitehorse for Yukon.

Listeners in each of the sub-regions receive a combination of national and northern produced radio programs, delivered through terrestrial and satellite networks and broadcast on local transmitters.

Whitehorse, Yellowknife, Inuvik, and Frobisher Bay produce daily northern newscasts. Distinct morning shows and current affairs programs also originate from each centre. A listener in Frobisher Bay, Rankin Inlet, or Baker Lake can hear Inuktitut and English, while a Yellowknife or Rae-Edzo audience can tune into Dogrib, English, Slavey, and Chipewyan programs. In the Delta, CBC programs are in English, Inuvialuk, Hareskin, and Loucheux. In contrast, CBC in Whitehorse broadcasts to a largely English-speaking population of native and non-native Yukon listeners.

Northern Service holds public meetings in the communities, encouraging listeners to express opinions and recommend changes to the service.

Radio societies in many communities have access to CBC transmitters at specified times of the day for airing their own local programs. To date, Northern Service has provided community radio equipment and/or assistance to 14 communities in the NWT.

Northern Service also makes broadcast recordings of northern musicians from across Yukon and NWT, distributing them to the radio stations and community access groups.

Review 1980-81

The NWT Legislative Assembly held an historic debate in Frobisher Bay on the question of the division of the NWT. The Northern Service pre-empted regular radio programming to carry the week-long debate live throughout the NWT. Daily summaries were in all the native languages.



Federal Election Special. Hosts John Gilmour (left) and Steve Houser (centre) interview independent candidate for the western arctic Ed MacRae at the Northern Service, Yellowknife.



Canada Week broadcast, June 26, 1980 on Whitehorse street. Judy Klein, CBC Yukon announcer/operator, (far right); Ron McFadyen, CBC Yukon announcer/operator, (second from right); guest Chef Nelson Lewis, (left); technician Tim Kinvig, (background).

This was the first year of operation for the radio production unit in Ottawa. The unit has a producer, a news editor, and a production assistant, and shares facilities with CBO radio at the Chateau Laurier. The unit provided regular syndicated material for the northern locations, and improved the access of northerners to information from government agencies and politicians south of 60°.

Northerners were recruited for two station management positions. The manager of operations at Inuvik, is now a native of the Delta. The managers' preparation for the new position included assignments with the CBC in southern Canada. In Rankin Inlet, the new area manager is fluently bilingual in English and Inuktitut.

Some of the technical facilities at the Frobisher Bay station were upgraded through the year. Further improvements are scheduled for 1981-82. Extensive testing of the satellite audio network was performed, resulting in an improvement in the signal quality throughout the eastern arctic.

In the fall, 1980, the area manager for the Keewatin led an intensive one-month training session in Rankin Inlet. Seven Inuit trainees spent the full month together. Using Inuit people, all the working sessions were in Inuktitut, emphasizing the use of Inuktitut and its importance as a working language for professional broadcasters and journalists.

Plans for 1981-82

The Northern Service will gain access to two additional satellite audio channels this year, permitting significant changes to the radio programming service in the Northwest Territories. Using these channels, it will be possible for the station in Yellowknife to produce separate programming for different parts of the Great Slave region, while the Inuvik station will tailor its programming to better serve the needs of the different language groups of the western arctic.

It is anticipated that the stations in Frobisher Bay and Rankin Inlet will enter a program exchange with Radio Greenland this year, sharing tapes of material reflecting the lives of Canadian and Greenland Inuit.

Native language training for Inuit broadcasters will be continued this year, building on the model of the sessions held in 1980-81. It is hoped that an Inuktitut-speaking position will be added to the Ottawa radio production unit during the year.

television

Review 1980-81

CBC North produced its second season of the northern magazine series *Our Ways*. Sixteen of these half-hour programs were produced in the NWT and Yukon. Ten were packaged in Yellowknife with Inuktitut and Slavey commentaries. The Christmas episode of *Our Ways* was shown in several cities in the South as well as the North, and *Bylot Island*, another episode, was shown across Canada on the CBC national network.

Other CBC North series were *World Magazine*, which presented quality films from Canada, the U.S., the U.S.S.R., and the Third World, and *We Inuit*, 13 half-hour episodes reflecting Inuit lifestyles. These were all in Inuktitut. In addition, CBC North continued to offer *Tarqavut*, weekly quarter-hour Inuktitut programs produced by CBC Montreal, and *Inunatsiakmiut*, an Inuktitut series produced by an independent Inuit production group in Frobisher Bay.



Repairing a damaged cable at Cassair CBC Yukon Territories.



CBC's *True North* concert. The first one was held at Frobisher Bay's Nakasuk School, March 5, 1980.

More than 30 freelance northerners were involved in CBC North productions during the year. One formal production workshop was held, and two full time training positions for native northerners were provided through Northern Careers Program.

In November, 1980, the American Film Institute declared the film *We Remember* the best feature documentary of the year. The film was produced by Raymond Yakelaya, a Dene filmmaker. The film was financed by CBC North and made with the technical assistance of CBC Yellowknife production unit.

An experimental Inuit television service, *Inukshuk*, began broadcasting in six NWT communities in 1980-81. This was done with the assistance of the federal government. The transmission equipment, including a satellite channel, was loaned to Inukshuk until the spring, 1981. The CBC Northern Service has offered time on its network transmitters to carry future Inuit programming.

Plans for 1981-82

CBC North will continue to produce northern programs and items, purchase and schedule independently-produced northern material, and encourage the use of native language programming. Special emphasis will be placed on content directed at children, women, seniors, learners, consumers, and other special audiences.

In cooperation with Northern Service radio, some CBC North TV programs will have an additional soundtrack simulcast on radio – allowing for the program to be presented in more than one northern language. ■

Canadian National Railways

CNR

Responsibilities

CN provides the North with transportation and telecommunication services. In the past, this has included transportation to the mining, forest industries, exploration and construction projects as well as telecommunications for residential and commercial use. Consultation services have also been provided for the logistical planning of pipelines, rail lines and other studies.

Review 1980-81

There were no significant new activities that affected CN Rail transportation services in the western arctic. CN Rail continued to move the regular lead-zinc concentrate traffic from Pine Point Mines, Pine Point, NWT, and traffic to Hay River for northern community resupply and exploration work in the Beaufort Sea.

There was no change in CN's transportation links to Yukon. No recent developments in Yukon have required transportation services involving CN Rail. If construction of the Foothills Pipe Lines (Yukon) Ltd. gas pipeline goes ahead CN Rail expects to be very much involved in providing a portion of the transportation for 56 inch and 48 inch pipe. It is not anticipated that there will be any traffic associated with the Foothills pipeline in 1981.

NorthwesTel, one of the Canadian National group of companies, was established in 1978 to manage and operate all of CN's telecommunications business in northern British Columbia, Yukon and the western half of the Northwest Territories.

The company, with headquarters in Whitehorse, provides a full range of such telecommunications services as local and long distance telephone, Telex, data communications, leased circuitry, telegram and radio telephone service. The operating area is in excess of 2.35² km.

Several major projects were undertaken during 1980 involving expansion of the company network.

Telephone exchange and long distance service were established to the northern B.C. communities of Iskut and Telegraph Creek with trans-Canada connection through the Fort Nelson toll centre.

Automatic number identification equipment for direct distance dialing was installed at Faro, YT, and Cassiar, B.C. Equipment was ordered and delivered in late 1980 for automatic number identification at three additional communities.

Equipment to provide touch-tone service was installed at Faro, Cassiar, Watson Lake, Fort Nelson, Muskwa, Pine Point, Fort Smith and Fort Simpson.

Additional mobile radio-telephone base stations were established at Dawson City, Whitehorse, Fort Nelson, and Wonowon.

A 120 channel microwave system was installed and is presently serving the community of Mayo, replacing an open wire pole line.

New warehouse complexes were constructed at Yellowknife and Whitehorse to house the stores department.

Direct distance dialing service was initiated at the communities of Arctic Red River, Old Crow, Gjoa Haven, Spence Bay, Pelly Bay, Cambridge Bay, Holman, Snowdrift, Coppermine, Rae, Edzo, Fort Norman, Fort Providence, Fort Resolution, Paulatuk, Sachs Harbour, Dease Lake, Lower Post, and Pelly Crossing.

Other sections of the toll switched network including the cable distribution plant were upgraded and expanded on a progressive basis to meet subscriber demand.

Telephone exchange expansion and/or replacement projects were undertaken at Fort Resolution, Fort Norman, Teslin and Beaver Creek.

December 31, 1980

	Telephone Exchanges	Main Stations	Total Telephones
British Columbia	12	2 951	4 849
Yukon	18	9 494	15 658
Northwest Territories	33	11 540	18 662
Total	63	23 985	39 169

Communities served	59
Direct Distance Dialing	99 per cent
Automatic Number Identification	80.3 per cent
Touch-Tone availability	90.8 per cent

Plans for 1981-82

NorthwestTel will continue to improve and expand telecommunication services during 1981-82. A 120 voice channel capacity troposcatter radio system for service between Hay River and Fort Smith is scheduled for completion in 1981. The existing open wire pole line that runs adjacent to and through the Wood Buffalo Park will be decommissioned. With turn-up of this system, communications to the community of Fort Smith will be considerably expanded and improved with minimal environmental impact. Micro-wave expansion from 960 to 1800 voice channels for Hay River to Fort Providence is scheduled for mid-summer. An existing mid-point repeater has been overbuilt with repeaters at Heart Lake and Kakisa, designed to improve the quality of transmission and eliminate an occasional fading problem experienced during adverse weather conditions.

In late 1980, a 12-year agreement was negotiated with Alascom. This provided for the lease of 600 voice channels for two years from the Alaska-Yukon border to the Alberta-U.S. border and the subsequent lease of 1500 channels for ten years between the Alaska-Yukon border and the Canada-U.S. border near Skagway, Alaska. To provide the necessary capacity along this route a major construction program is being undertaken to replace the existing 960 voice channel tube type microwave equipment between Whitehorse and the Yukon-Alaska border with a 1800 voice channel system and to construct a new 2400 voice channel microwave system from Whitehorse to the Alaskan Panhandle at Skagway via two new repeater sites at Fraser and Caribou in southwestern Yukon.

The Telex network will be upgraded by replacing the existing electromechanical Telex exchanges at Fort St. John and Whitehorse with solid state digital equipment.

The replacement is underway of the existing electromechanical long distance telephone exchanges at Hay River and Fort Nelson with new digital solid state exchanges. It is scheduled to be completed at Hay River by June, 1981, and Fort Nelson by mid-1982. The existing local and long distance exchanges at Fort Nelson will be dismantled as the digital switch will function as both a local and long distance exchange.

Early in 1981 the existing electromechanical crossbar telephone exchange at Tuktoyaktuk will be replaced with a new solid state processor controlled electronic exchange. This will make available a full complement of modern telephone services to local subscribers.

Telephone service is scheduled to be established at the remote communities of Lac La Martre and Rae Lakes, NWT, by October, 1981, under the provisions of the Government of Canada "Northern Communities Assistance Program".

Expansion of existing local telephone exchanges is planned for Faro, Fort Liard, Muncho Lake, Rae, Edzo, Dawson City, Haines Junction, Mayo, and Pine Point. Upgrading of local telephone exchanges during this period will provide access to touch-tone service, direct distance dialing (DDD), and automatic number identification (ANI).

Telephone service to the native community of Burwash on the west shore of Kluane Lake will be expanded and upgraded from united multi-party to individual service. ■

Canadian Transport Commission

CTC



Air Transport Committee

Responsibilities

The ATC licenses air carriers for commercial air services, provides economic regulation of air carriers, investigates and surveys operations and developments of commercial air services in Canada and advises the Minister of Transport on civil aviation matters.

Review 1980-1981

DEW Line contracts were awarded to Pacific Western Airlines Limited (PWA) for the vertical airlift (north-south) for the period November 1, 1980, to September 30, 1981, (after the previous contract had been extended to October 31, 1980); and to Nordair Limited for the lateral airlift (east-west) for the period November 1, 1980, to September 30, 1981.

As a preliminary to a 1981 public hearing into applications affecting air services in the District of Keewatin, ATC carried out an intensive on-the-spot inquiry into the adequacy of commercial air services to, from and within the area.

Classification

Class:	Commercial service (domestic)
1	scheduled
2	regular specific point
3	specific point (consistent with traffic requirements)
4	charter
7	specialty
	Commercial service (international)
8	scheduled
9-2	regular specific point
9-4	charter

Aircraft groups according to weight

A to H	light to heavy
A-RW	rotating wing — light
C-RW	rotating wing — medium

Authorities Granted

Air North Charter & Training Ltd.

Amend licences by including Group D authority to a Class 4; Groups A, B, and C, to a Class 7; Group A to a Class 9-4.

Beaufort Flying Services Limited

Authority to operate a Class 9-4 using Group A fixed-wing aircraft from a base at Tuktoyaktuk, NWT.

Bradley Air Services Limited (First Air)

Amend a Class 2 in Groups C, D, and E to add Pond Inlet and Nanisivik, NWT; authority to operate a Class 9-2 service in Group E, propeller-driven, between Frobisher Bay, NWT, and Nuuk (Godthaab), Greenland.

Buffalo Airways Ltd.

Amend a Class 4 to include Group D authority for a service based at Hay River, NWT; amend a Class 4 to include a Class 7, restricted to base at Fort Smith, NWT; amend a Class 4 in Group A-RW to include Group C-RW authority for service based at Fort Smith, NWT; transfer to L and A Aviation Ltd. a Class 4, Groups A and B for a service based at Hay River, NWT.

Cameron Bay Air Services

Cancel Group C authority under a Class 4 service from a base at Cameron Bay, NWT.

Fort Smith Air Service Ltd.

Suspend Group C authority under a Class 4 and a Class 7 service from a base at Fort Smith, NWT.

Hay River Services Ltd.

Authority to operate a Class 4, Group A, from a base at Hay River, NWT.

Husky Air Services Ltd.

Cancel a Class 4 and Class 7 based at Fort Smith, NWT.

Joseph Kanik

Amend a Class 4 authority to operate from a base at Cornwall Island, Great Bear Lake, NWT, to change name to 238375 Alberta Ltd.

Keewatin Air Ltd.

Amend a Class 4, Groups A and B authority to operate from a base at Rankin Inlet, NWT, to include a Class 7.

Kenn Borek Air Ltd.

Amend a Class 4 authority to operate from a base at Inuvik, NWT, to include Group E; amend a Class 3 to remove Isachsen, Rae Point, Eureka and Igloolik, NWT.

Klondike Air Charter Services Ltd.

Authority to operate a Class 4 and Class 9-4 service using Group A and B aircraft, from a base at Dawson City, YT.

Warren John LaFave

Authority to operate a Class 4, Groups A and B, from a base at Burwash Landing, YT, under incorporated name of Kluane Airways Ltd.

L and A Aviation Ltd.

Transfer from Buffalo Airways Ltd. a Class 4 service, Groups A and B, from a base at Hay River, NWT.

Lambair

Suspend a Class 4, Groups B and C, based at Rankin Inlet, NWT.

Mayo Helicopters Limited

Cancel a Class 4, Group A-RW, and Class 9-4 based at Mayo, YT.

Nahanni Air Services Ltd.

Transfer from Norcrown Airlines Ltd. authority to operate a Class 4, Groups A and B service from a base at Ross River, YT.

Norcross Airlines Ltd.

Cancel a Class 9-4 authority to operate from a base at Ross River, YT; transfer to Nahanni Air Services Ltd. the authority to operate a Class 4, Groups A and B, from a base at Ross River, YT.

Northward Airlines Limited

Suspend Group E authority under a Class 2 and Class 3, and suspend a Class 4 and Class 9-4 based at Whitehorse, YT; transfer a Class 4, Groups A, B and C based at Yellowknife, NWT, to Turn-Air Ltd; cancel Class 4, Group D, authority for service based at Norman Wells, NWT; suspend seven licences pending their transfer.

North West Territorial Airways Ltd.

Amend a Class 4 and Class 7 authority to operate from a base at Yellowknife, NWT, by removing limitations on number and types of aircraft and by restricting operations to fixed wing in Groups D and F and turbo prop in Group G; amend licences to change name to Northwest Territorial Airways Ltd.

Pacific Western Airlines Limited

Cancel the Group E authority under a Class 2 serving Yellowknife, NWT, and Whitehorse, YT; amend a Class 1 licence by adding the point Whitehorse, YT, with a prohibition on non-stop service between Whitehorse, YT, and Inuvik, NWT.

Page Flight Services Ltd.

Cancel a Class 4 authority to operate from a base at Fort Good Hope, NWT, for failure to obtain an operating certificate; amend a Class 7 to include a Class 4, Group A authority to operate from a base at Norman Wells, NWT, with conditions limiting points served, aircraft used and special flights for limited periods.

Ptarmigan Airways Ltd.

Amend a Class 3 authority to remove Rae-Edzo and Fort Reliance, NWT; waiver of licence condition to permit direct Sunday service, for a one-year period, between Yellowknife and Hay River, NWT.

Raecom Air Limited

Amend a Class 4 authority to operate from a base at Yellowknife, NWT, by lifting restrictions on season, passengers and points served, and adding conditions on aircraft size and route points.

Shirley Air Services Ltd. (formerly Shirley Helicopters Ltd.)

Authority to operate a Class 4 using rotating wing Group A-RW, from bases at Yellowknife and Inuvik, NWT, and Whitehorse, YT.

Simpson Air Ltd.

Amend a Class 3 licence to change the name to *The Northern Commuter*.

Steinwand's Transport Ltd.

Authority to operate a Class 3 service, Groups A and B, serving Fort Rae, Lac La Martre, Rae Lakes and Snare Lake, NWT, under name and style of *Air Dogrib* for an experimental period of two years.

Trans North Turbo Air Limited

Amend a Class 4 and Class 9-4 authority to operate from a base at Whitehorse, YT, to include Group C-RW; amend a Class 3, Groups A, B and C, to lift renewal restrictions and to permit non-stop service between Whitehorse and Watson Lake, YT; authority to operate a Class 4 and Class 9-4 service using Group D aircraft from a base at Mayo, YT; amend existing licences to permit the use of Group D aircraft to serve the Yukon market from bases at Mayo and Whitehorse, YT.

Turn-Air Ltd.

Transfer from *Northward Airlines Limited* a Class 4, Groups A, B and C service based at Yellowknife, NWT.

Whitehorse Flying School Limited

Amend a Class 7 authority to operate from a base at Whitehorse, YT, to include a Class 4, Group A.

Wien Air Alaska, Inc.

Lift suspension of a Class 8 authority to serve Fairbanks, Alaska, and Whitehorse, YT.

Yellowknife Air Services Ltd.

Lift suspension of a Class 7, Group B, based at Yellowknife, NWT.

Bankruptcies

Northward Airlines Limited which purchased all the shares and licences of Gateway in 1979, declared bankruptcy and ceased all operations in March, 1980. As a result, temporary authorities were granted to meet some public needs. There is a proposal that shares acquired by Northward be transferred back to Gateway and that Gateway be purchased by Time Air.

Public hearings on a number of applications and proposals of transfer by air carriers, and to inquire into the adequacy of commercial air services in the areas formerly served by Northward, both in Yukon and the NWT, were held in Whitehorse, YT, March 9-12, 1981; Inuvik, NWT, March 13-14; and Yellowknife, NWT, March 16-19. Since Northward's bankruptcy, the areas have been served under temporary licences.

Lambair declared bankruptcy February 26, 1981, its licences were suspended February 27, 1981, and the Air Transport Committee ordered Lambair to show cause, by March 30, 1981, why its licences should not be cancelled. Calm Air, Ellair and Ontario Central were granted temporary authorities to provide some services.

Water Transport Committee

Responsibilities

The WTC administers the Transport Act which governs the transport of goods and passengers by ship from one port or place in Canada to another.

Its judicial functions include licensing and the approval of tariffs for commercial water carriers.

Review 1980-1981

Six applications for water transport licences were considered and four were granted in respect of 236 vessels totalling 31,173.11 gross tons in the Mackenzie River Watershed and the Canadian western arctic.

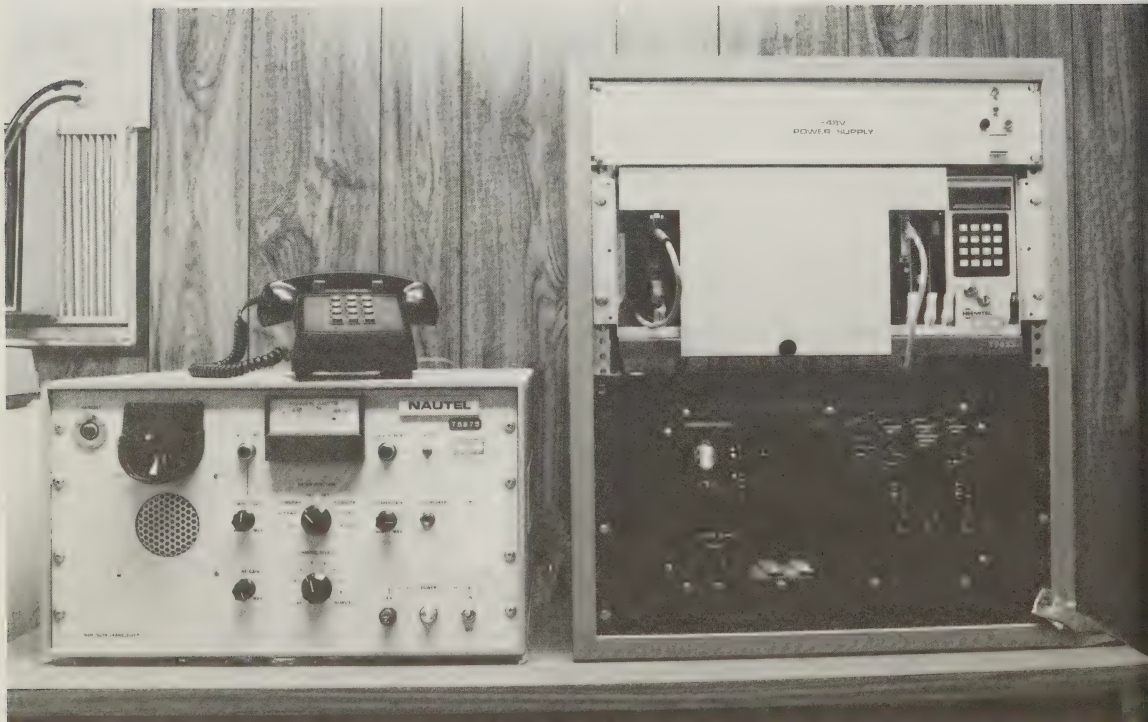
Two applications were denied on the grounds that there was no evidence that present or future public convenience and necessity required the service.

Authorities granted

Cooper Barging Service Ltd. — Mackenzie River Watershed; Little (3) Transport & Salvage Ltd., Lake Athabasca Area of Mackenzie Watershed; Northern Transportation Company Limited, Mackenzie River and Canadian western arctic; Arctic Transportation Ltd., Mackenzie River and Canadian western arctic. ■

Department of Communications

DOC



DOC engineers have improved and automated the high frequency radio-telephone system (RACE) which could go a long way towards improving communications for small isolated communities and camps.

Responsibilities

The Department of Communications, in fostering the development and operation of telecommunications for Canada, directs attention to the specific needs of northern Canadians. It endeavours to recognize these needs when developing national communications policies and programs. DOC promotes the development of efficient northern communication facilities and helps northern Canadians adjust to rapidly-changing conditions. DOC continues to be involved in a number of activities in the North on both the experimental and operational level.

Review 1980-81

The department was involved in experimental and operational activities in the North and participated in joint ventures with other government departments and private groups.

The department was active in the Advisory Committee on Northern Development (ACND), maintaining its role as coordinator of northern communications planning. A major portion of the department's ACND involvement was administered through its committees in the territorial capitals, Whitehorse and Yellowknife. The DOC district manager for Yukon is a member of the Federal Interdepartmental Coordinating Committee (FICC) in Whitehorse and chairs the Communications Sub-Committee of the FICC. The DOC Central Region director, who holds responsibility for the NWT and the prairie provinces, is a member of the NWT Coordinating Committee in Yellowknife and chairs that Committee's Standing Group on Communications. DOC is also represented on the ACND Transportation Committee by the National Telecommunications Branch.

In 1980-81 the Central Region participated in the shared program, Summer Job Corps, with the Department of Employment and Immigration. This shared program, which operates in northern Manitoba and Saskatchewan as well as the NWT, provides basic training in communications and introduces young native people to careers in communications. With the program completely decentralized to the level of District Office within the NWT, DOC created 63 NWT communications training positions of which 57 were filled by native students. These projects helped DOC use community people trained in communications. The long-term potential of this program is to identify new personnel and reduce unemployment by creating new opportunities.

Central Region's Local Agent Development program entered its final year. Originally initiated under the Economic Growth Component of Canada Works, the program was continued by DOC when it was cancelled by Employment and Immigration. The program, developed because telephone service and repair is often hampered by the lack of trained people in northern communities, was a joint project with NorthwesTel. This project involved training residents as local agents in specific communities throughout NorthwesTel's sector of the Yukon and western NWT. Once these trainees have reached a level at which they can be taken on as permanent employees of NorthwesTel, they are able to help ensure telephone service comparable with southern standards for their communities.

In June, 1980, Central Region created a position of manager, native projects. This position helps respond to native communications concerns throughout both the NWT and the prairie provinces. Another administrative change involved assumption by the Yellowknife District Office of communications responsibility for the eastern arctic. The Baffin Island Region will now be administered from Yellowknife. This structure is in line with the territorial government administration procedures.

Over the past two years the department has been involved in several experiments using the Anik-B satellite. These experiments have significant implications for the future of native programming and extension of basic television services in the far North. The Anik-B satellite, the world's first dual-band satellite, operates in both the conventional 6/4 GHz band and in the new 14/12 GHz frequency. DOC is leasing this high-frequency portion for its pilot projects.

"Inukshuk", the project formulated by the Inuit Tapirisat of Canada (ITC) with assistance from the Departments of Communications and DIAND, involves interactive communications and teleconference links to meet the particular needs of Inuit communities in the NWT. Satellite earth stations are located in Eskimo Point, Pond Inlet, Cambridge Bay, Igloolik and Baker Lake with the video transmit terminal located at Frobisher Bay. The Inuit Tapirisat has established a production centre at Baker Lake and a studio in Frobisher Bay. The ITC is working with the Pond Inlet Community Television Society (PIC-TV) to produce programming for the experiment and to purchase programming from Cambridge Bay and Eskimo Point.

The federal commitment to "Inukshuk" includes \$1.9 million through the Department of Indian Affairs and Northern Development to cover the costs of training, salaries, leasing and capital expenditures, travel, and general administration. The DOC contribution to ITC and TNI (Taqramiut Nipingat Inc.) is in the order of \$2 million for satellite time and earth stations. DOC's Communications Research Centre and the Central Region also provide professional and technical expertise and assistance.

The satellite-supported television operation links a number of communities permitting teleconferences, educational instruction, and general Inuit-language broadcasting. As a result of this pilot project, a pool of Inuit personnel, trained in the technical and production aspects of television, is now producing northern native programming.

A similar experimental project has been developed by Taqramiut Nipingat Inc. (TNI), established to improve communications in northern Québec communities. The project, "Naalakvik II", is currently under way in five communities: Sugluk, George River, Inukjuaq, Great Whale River and Fort Chimo. Video broadcast transmitters, linked by satellite, are installed in these five communities to enable them to receive programming uplinked from TNI's own production centre in Sugluk.

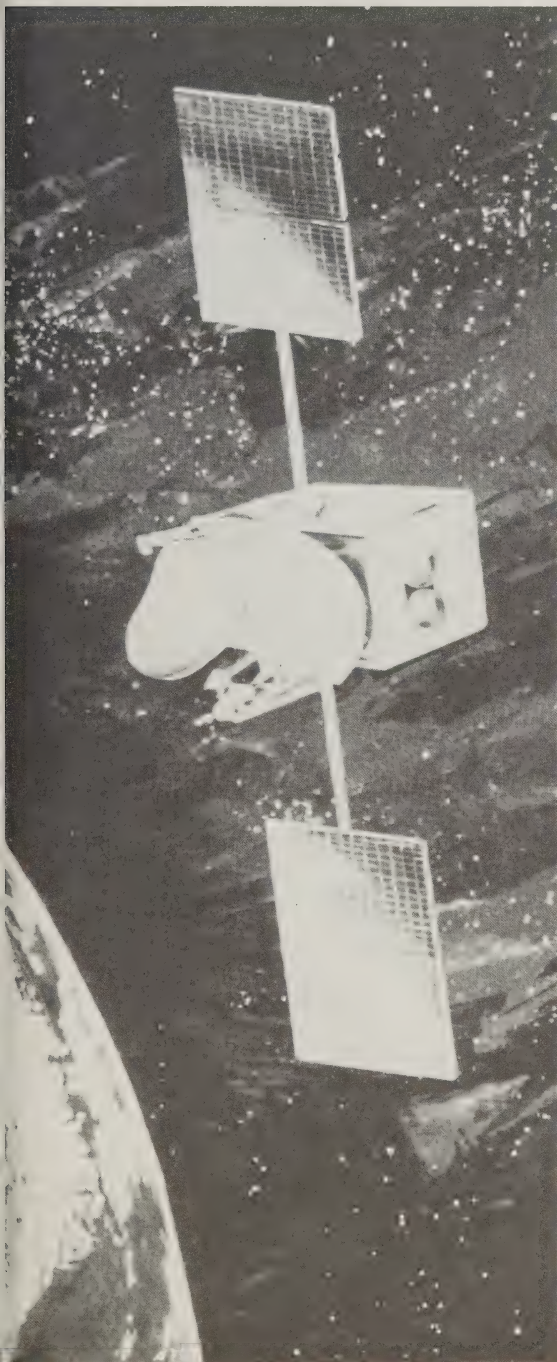
The third major Anik-B satellite experimental program which has direct relevance to the North involves delivering two channels of television programming via one satellite transponder and utilizing small 1.8 m satellite ground stations. The system uses a new generation of low-cost receivers, making this method of delivery suitable for rural and remote areas. Satellite television receive-only earth stations (TVROs), lent by DOC, have been installed by the department at Whitehorse, Johnsons Crossing, Eagle Plains, Watson Lake, Cross River and Stewart Crossing in the Yukon, and in Yellowknife, Fort Providence, Inuvik, Fort Simpson, Echo Bay, Norman Wells, Fort Smith and Taltson River in the NWT. For several months before freeze-up, a TVRO was in use on Explorer 4, a Dome Petroleum drillship in the Beaufort Sea. Results so far have been encouraging, as the difficulties inherent with the far North, such as weather conditions and the low angle of reception, have been overcome. Since September, 1980, three TV signals have been carried by one transponder to meet program commitments to other pilot projects.

A much smaller but interesting demonstration sponsored by DOC and utilizing the Anik B 14/12 GHz facilities took place when the Northwest Territories Legislative Assembly held an eight-day working session in Baker Lake in June. A TV satellite teleconference facility provided by DOC in conjunction with the territorial Department of Information allowed legislators to have access to their officials for up to two and a half hours per day. The teleconferencing link provided one-way video transmission from Yellowknife to the community of Baker Lake and two-way audio transmission between the locations.

In April, 1980, a committee appointed by the Canadian Radio-television and Telecommunications Commission (CRTC) completed a series of public meetings investigating methods for delivering improved television service by satellite to Canadians in northern and remote areas. The committee had held special regional meetings in Baker Lake and Whitehorse prior to the main session in the National Capital Region to facilitate the participation of northerners and to obtain their ideas on how to obtain increased and more varied television services suitable to the North. The report of this committee was released July 24. As a result of the report, the CRTC, on October 16, issued a call for licence applications from broadcasting undertakings for a variety of radio and television programming services from Canadian networks, Canadian stations and other Canadian sources that would be attractive to Canadians living in northern and underserved parts of the country. As a result, a new multi-channel TV service should be operational during the new fiscal year.



This experimental low-cost earth terminal is one of several located throughout the North.



Experimental television programming is being carried out on the 14/12 GHz portion of this Anik-B satellite.

In January, 1981, the CRTC issued licences to four new CBC broadcasting undertakings in the NWT under the Accelerated Coverage Plan. A broadcasting licence was granted for an 87 Watt English-language FM radio station at Gjoa Haven to rebroadcast the CBC English AM network from Frobisher Bay. In Fort Franklin, Fort Good Hope and Gjoa, broadcasting licences were issued for 10 Watt television stations to rebroadcast English language programming received via satellite.

During the past year, the Department of Communications maintained close working contact with the CBC Northern Service. Both DOC and CBC support more native television training and production. The activities of the Northern Service are described in full under the CBC section of this report.

The Department of Communications handles all aspects of authorization, licensing, frequency assignment and spectrum management under the Radio Act. In the North, this service is provided by the District Offices in Yellowknife, Fort Smith and Whitehorse. The Fort Smith Office also operates a monitoring station.

Telephone services continued to improve throughout the North with Telesat installing two Thin Route message stations — small earth stations used for carrying telephone traffic. There was also a general upgrading of long distance service by expanding the Thin Route service with additional circuits in 24 communities through the North. Bell Canada, in addition to a new satellite service at Little Cornwallis Island, installed additional long distance circuits at Baker Lake, Broughton Island, Cape Dorset, Chesterfield Inlet, Coral Harbour, Eskimo Point, Igloolik, Lake Harbour, Pangnirtung, Pond Inlet, Rankin Inlet, Repulse Bay, Whale Cove, Frobisher Bay, Hall Beach, Resolute, and Nanisivik.

Bell Canada continued to provide Inuit subscribers with facsimiles of their monthly bills in Inuktitut, a practice begun in 1978. Bell also continued to distribute a trilingual telephone directory (Inuktitut, English, French). The book uses, where possible, the special dialect of the communities involved.

Coral Harbour received the new DMS-10 S.D.O. — "Small Dial Office" machine — as part of a ten-year program to replace older, less reliable switching equipment in the North. The "Small Dial Office" machine is one of a new family of digital switching machines designed by Bell Northern Research and manufactured by Northern Telecom. The S.D.O. has a maximum capacity of 500 lines and is less costly and better suited to the special conditions encountered in the North.

NorthwesTel completed the move of its operating headquarters from Edmonton to Whitehorse. Additional information on its activities is included in the section on NorthwesTel Inc./NorouesTel Inc. included under CNR.

In 1980-81, federal government support for improved telecommunications services in the NWT amounted to some \$175 000. This was provided under the Northern Communications Assistance Program (NCAP) for work completed by NorthwesTel in Snare Falls and Port Radium, and under the Minimum Annual Revenue Guarantee (MARG) Agreement for continued satellite service to Chesterfield Inlet. The payment made under the MARG program in 1981 completed the five-year agreement between Bell Canada and the Government of Canada. Service to Chesterfield Inlet will now have to be continued through normal carrier operations as has been the case with previous MARG communities.

Federal funding to the Northern Communications Assistance Program, (NCAP) announced in January, 1977, was reduced to \$7.2 million from \$9 million. These contributions cover the capital cost of communications facilities to bring long distance telephone service to the Northwest Territories. Bell Canada and NorthwesTel, the two telecommunication carriers in the territories, are investing a similar amount for local exchange equipment. The long distance links are being provided by satellite ground stations or ground based circuits. NCAP does not affect the Yukon.

Engineers in DOC's Research Sector have improved and automated an HF (high frequency) radiotelephone system which could go a long way towards improving communications for isolated northern communities and camps. The new system, called RACE (radio-telephone with automatic channel evaluation) improves chances of making radio contact and eliminates the need for an operator. The RACE system provides automatic telephone service in an outlying settlement, mining camp or drilling rig with links via HF radio to the switched telephone systems in larger communities. The improved radiotelephone complements satellite communications. Field tests of this system are scheduled for the summer of 1981.

Plans for 1981-82

The Department of Communications will continue to promote communication services throughout the North. It will also encourage the development of more northern and native programming for broadcast.

The CRTC is expected to announce early in the new year its decision on the applications for satellite-delivered programming for Canadians living in northern areas. A new multi-channel satellite-delivered TV service ought to be operational and available to northern communities later in 1981.

The shared Summer Job Corps program of the DOC Central Region and Employment and Immigration will be continued. Support will also be given to the Adult Vocational Training Centre at Fort Smith, NWT, for training in electronics to bring candidates up to a standard meeting the Public Service Commission requirements for employment within the public service.

Telesat plans that Thin Route message service will be provided in Eureka, Tuktoyaktuk and Arctic Bay during the fiscal year. It also anticipates the extension of CBC radio services under the Accelerated Coverage Plan to the communities of Inuvik, Yellowknife, Cambridge Bay and Frobisher Bay.

It is expected that additional work will be funded under the Northern Communications Assistance Program (NCAP) for the provision of long distance and local telephone service in additional communities in the NorthwesTel service area.

Bell Canada will continue its satellite circuit expansion program at Arctic Bay, Baker Lake, Broughton Island, Chesterfield Inlet, Clyde River, Coral Harbour, Eskimo Point, Leaf Bay, Nanisivik, Pangnirtung, Rankin Inlet, Repulse Bay, Whale Cove, Frobisher Bay, Hall Beach, and Resolute. The new DMS-10 SDO is scheduled to be installed at Arctic Bay, Lake Harbour, Leaf Bay, Little Cornwallis Island and Repulse Bay in 1981 to replace the old step-by-step switching machine. ■

Crown Assets Disposal Corporation

CADC

Responsibilities

Crown Assets Disposal Corporation is a federal government agency which acts as an agent of the Crown in the sale of surplus assets reported by federal government departments and agencies. Many of these assets are sold from locations in the North. Under a long-standing agreement, sales are also carried out of United States government surplus property located at DEW Line sites and other northern establishments. In addition, by agreement, the corporation is the agent of the Government of the Northwest Territories in the sale of its surplus assets.

Review 1980-81

The corporation experienced increased sales of Canadian and United States government surplus assets at locations in the North. This increase in sales is attributed to a greater awareness by the public of the CADC presence in the area.

Plans for 1981-82

The corporation will open a regional office in Winnipeg, Manitoba, in May, 1981. This office will be responsible for that area of the arctic located east of 90° west longitude. ■

Eldorado Nuclear Limited

NUCLEAR

Eldorado Nuclear Limited, the federal Crown corporation engaged in the exploration, mining and refining of uranium for generation of electricity, participated in two field exploration programs in the Mackenzie District of the Northwest Territories and the Yukon Territory during 1980.

Eldorado anticipates an increased level of exploration activity in 1981. ■

Department of Energy & Mines & Resources

EMR



The Earth Physics Branch carries out drilling at Illisarvik drained lake site, Mackenzie Delta, to investigate permafrost growth.

Geological Survey of Canada

Responsibilities

The Geological Survey of Canada provides a comprehensive inventory and understanding of the geological framework of the country. Its activities include determination of the mineral and energy resource potential of Canada, land capability, and conservation of the natural environment. It obtains information about the geological framework of Canada, its properties, evolution and development. Information on bedrock geology is obtained through surveys, regional studies and national compilations. This information is used to identify resources and appraise non-renewable resources potential. Similar studies — essential when evaluating energy and mineral resource development — obtain information about the nature of evolution of the Canadian landscape, its surficial materials, terrain properties, hazards and capabilities. The Geological Survey also does resource identification and each year makes estimates of the amount and quality of certain energy resources. Estimates for mineral commodities are made less frequently because of the complex calculations involved.

Review 1980-81

Preliminary results of the 1980 field season were released in Current Research, Part C (November, 1980) and Current Research, Part A (February, 1981). The former contained three items on the North, the latter 34.

Field work carried out in Yukon and the adjacent District of Mackenzie provided further information bearing on understanding the geological evolution of the Cordillera. Trace fossils found in the Nidderly-Lake map area in the Selwyn Mountains will help define the Precambrian-Cambrian boundary. Bedrock mapping in the Nahanni map-area was essentially completed and a study continued of the surficial deposits and geomorphology, and the mineralogy and geochemistry of the Howards Pass Pb-Zn deposits. Several lower Paleozoic and Devonian stratigraphic sections were studied in detail to provide information for paleontologic control and sedimentological studies. No new mineral occurrences were noted, however a new area of Road River Shale (the host rock of several important mineral deposits) was mapped. The description of the type section of the Early to Middle Devonian, Bear Rock Formation in the Franklin Mountains was considerably revised. This revision will aid in solving problems arising in subsurface correlation.

Field work in the arctic islands was concentrated on three problems: the detailed geology of the eastern Sverdrup Basin, the structural history of the Innuitian Fold Belt in central Ellesmere Island, and the lower Paleozoic geology of northern Ellesmere. The first reported mineral occurrence in the eugeo-synclinal rocks in northern Ellesmere and Axel Heiberg Islands was found east of McClintock Inlet. The mineralization consists of tennantite in a dolomitized shelf carbonate of Late Ordovician age.

Examination of Precambrian rocks in widely separated areas provided insight into some of the many unsolved problems. The structure of the Precambrian basement rocks of eastern Devon Island contrasts with the basement rocks of adjacent southeastern Ellesmere Island and Coburg Island. Outcrops of Proterozoic sediments near Hadley Bay on northern Victoria Island provided evidence to extend the tectonic relationships of the Bathurst Inlet and Coronation Gulf areas. In the Slave province, field evidence suggests an ancient passive continental margin that was destroyed.

Detailed work near Great Bear Lake resulted in a revision of the stratigraphic nomenclature for part of the Wopmay Orogen, and a detailed description of a Proterozoic volcanic complex at Tuertok Lake. Mapping in the Beechey Lake-Duggan Lake map area and in the Healey Lake map area did not show as distinctive changes across the enigmatic Thelon Front (the boundary between the Slave and Churchill structural provinces) as suggested by previous geological surveys. The relationship of the granitic rocks to two stages of metamorphism was examined during field work in the Fort Smith map area. Field work in Keewatin continued in the region of Baker Lake. Field study in the Amer Lake area of the metamorphosed volcanic, sedimentary and plutonic rocks of the Woodburn Lake Group provided preliminary information on the internal stratigraphy and structural relationships. In the west half of the Baker Lake map-area, five distinctive rock suites, each with distinctive styles of deformation, were identified. The west half of the Kamilukuk Lake map-area was shown to be underlain by two distinct units, one of older Precambrian granitic rocks intruded by quartz monzonite and diorite and the other of the younger Dubawnt Group of sedimentary and volcanic rocks. The uranium mineralization noted in the Dubawnt Group appears to be related in part to fracturing in the host rocks.

Field work involving the surficial deposits continued toward a terrain inventory and an understanding of the Quaternary history. Data concerning sea level history in the arctic islands was obtained during mapping on the Dundas Peninsula south-central Melville Island. Studies in the eastern arctic indicate that rock heave can be attributed to freezing of water and frost action on soils.

Observations of permafrost conditions and erosion following drainage of a lake near Tuktoyaktuk have indicated probable engineering implications. In central Keewatin, thin sand and gravel pads have been displaced by creep or mudflow. Normally sand and gravel are considered stable materials compared to fine grained sediments, thus displacement of these materials could result in engineering problems. Field work in northern Baffin and southern Bylot Islands and in northeastern Ellesmere and northwest Greenland provided data on previous glacial movements. Studies of bottom conditions in Beaufort Sea and Mackenzie Bay involved continuing cooperation with industry. During marine geology surveys in Baffin Bay, oil droplets were observed erupting at the surface of the sea near Scott Inlet and Buchan Trough, and a petroliferous core of dark grey mudstone was recovered from a diapir east of Cumberland Sound.

Appraisals were completed of the non-hydrocarbon mineral potential of northern Yukon and northern Ellesmere.

Plans for 1981-82

Of the 423 projects to be carried out by the Geological Survey of Canada in 1981-82, 143 will involve work in areas north of 60°. Of these, 52 will have a field component. Projects without a field component will involve laboratory investigations, evaluation of field data and preparation of maps and reports.

Field work in the northern Cordillera in Yukon and District of Mackenzie will involve bedrock studies on the metallogeny of the Yukon, the Helikian and Hadrynian stratigraphy of the eastern Cordillera and interior platform, stratigraphy, sedimentology and diagenesis in the southern Mackenzie Mountains, paleontological investigations concerning Devonian and Cambrian biostratigraphy, and Triassic ammonites, mapping and examination of the relationship of geochemistry to the mineral deposits in the Nahanni map area, and study of critical sections in the Mount St. Elias map-area, a major stratigraphic and structural study in the Ogilvie Mountains.

The Precambrian rocks of Keewatin and Mackenzie will be the subject of many field investigations. The potential of economic mineral deposits will be the focus of regional studies in the northwest region. There will be a study of the uranium resources of the Bear-Slave province and a new project on the metallogeny of the Baker Lake-Thelon region. Field mapping will be continued in the Beechey Lake-Duggan Lake and the Healey Lake map areas.

Different aspects of the thrust fold belt of the Wopmay Orogen, near Great Bear Lake, will be studied. Field work will be completed in the Regan Lake map-area and particular attention paid to the chemistry and geochronology of the Back River volcanic complex. The bedrock mapping of the Fort Smith and Baker Lake map-areas is also scheduled for completion. The metasedimentary and metavolcanic rocks in the Woodburn Lake map-area and their economic potential will be studied during mapping in that area. Mapping of the Ottawa, Farmer and Smith Islands in northeastern Hudson Bay should provide information on the volcanic rocks of the circum-Angava belt.

A large field party with three areas of interest will continue geological mapping and investigate the structure and stratigraphy in southern Ellesmere Island. Logistic support will be provided to stratigraphic and paleontological studies. Mapping and structural studies will be continued on the lower Paleozoic rocks of northern Ellesmere Island.

Offshore bedrock investigations are limited to a marine geology cruise on the Eastern Baffin Island Shelf and to continued aeromagnetic surveys and development of a reliable navigation system in the northern Arctic Ocean. Two field parties involving varying degrees of industrial cooperation will continue to assess the engineering geology problems of the surficial deposits of the Beaufort Sea as they apply to hydrocarbon exploration and development. The conditions to be examined include permafrost, ice scouring, distribution of surficial materials, origin of pingo-like features, and shelf edge stability. Similar conditions will be investigated during a cruise of the Hudson in Lancaster Sound and a base line established on Baffin Shelf where these conditions can be resurveyed to establish their temporal characteristics. Examination of the coastal processes on Bylot and northeastern Baffin Island will continue with emphasis on determining the long term effects of a 1979 storm.

Terrain inventory and Quaternary geology studies will include mapping in the Frances Lake and Nahanni map areas; mapping in south central Yukon along the potential pipeline route, mapping in western Victoria Island and area designated for the Y-line pipeline route, detailed stratigraphic investigations in the Mackenzie Valley, geochronological investigations in the high arctic at northern Ellesmere Island. Process studies are principally part of continuing long term investigations such as geomorphic and permafrost conditions near Tuktoyaktuk, monitoring of slope movement, hydrologic and morphologic studies of selected rivers along the Mackenzie Highway, and monitoring of rock heave.

Mineral resource evaluation studies will be undertaken for the whole of the Yukon Territory and for the proposed national park near Bathurst Inlet.

Reports and maps, relating to the Northwest Territories and Yukon Territory, were published by the Geological Survey in 1980-81. Some titles have been abbreviated.

Bulletins

272 Middle Ordovician to Lower Devonian deep-water succession at southeastern margin of Hazen Trough, Canon Fiord, Ellesmere Island, by H.P. Trettin, 1979.

286 Stratigraphy and sedimentation of the Otto Fiord Formation — a major Mississippian-Pennsylvanian evaporite of subaqueous origin in the Canadian Arctic Archipelago, by W.W. Nassichuk and Graham R. Davies, 1980. 87 p.

292 Stratigraphy and conodonts of Upper Silurian and Lower Devonian rocks in the environs of the Boothia Uplift, Canadian Arctic Archipelago. 70 p.

Part I — Contributions to stratigraphy, by Thorsteinsson (with contributions by T.T. Uyeno)

Part II — Systematic study of conodonts, by T.T. Uyeno

309 Volcanic rocks of the Paleohelikian Dubawnt Group in the Baker Lake-Angikumi Lake area, District of Keewatin, NWT, by D.H. Blake, 1980. 39 p.

306 Stratigraphy and correlation of lower Paleozoic formations, subsurface of Bathurst Island and adjacent smaller islands, Canadian Arctic Archipelago, by Ulrich Mayr, 1980. 52 p.

315 Cambrian to Upper Silurian stratigraphy, Somerset Island and northeastern Boothia Peninsula, District of Franklin, NWT, by A.D. Miall and J. Wm. Kerr, 1980. 43 p.

391 Structural framework of Lancaster Aulacogen, Arctic Canada, by J. Wm. Kerr, 1980. 24 p.

320 Valanginian miospore and microplankton assemblages from the northern Richardson Mountains, District of Mackenzie, by D.J. McIntyre and W.W. Brideaux, 1980. 57 p.

330 Uranium geology of the eastern Baker Lake basin, District of Keewatin, Northwest Territories, by A.R. Miller, 1980. 63 p.

Papers

76-31 Minor and trace element distribution in the heavy minerals of the rivers and streams of the Keno Hill District, Yukon Territory, by C.F. Gleeson and R.W. Boyle. 9 p.

78-17 Description of the Hume, Funeral and Bear Rock Formations in the Candex et al. Dahadinni M-43A well, District of Mackenzie, by N.C. Meijer-Drees. 26 p.

78-18 Lower Cambrian archeocyathid buildups, Pelly Mountains, Yukon Territory, by B.C. Read. 54 p.

79-15 Lower and Middle Pennsylvanian conodonts from the Canadian Arctic Archipelago, by K.P. Bender. 29 p.

79-22 New or formerly poorly known biochronologically and paleobiogeographically important gastropod and clean-iceratinid (ammonitoida) taxa from middle Albian rocks of mid-Western and Arctic Canada, by J.A. Jeletzky. 63 p.

79-23 Cretaceous and Tertiary sediments of Eclipse Trough, Bylot Island area, Arctic Canada, and their regional setting, by Andrew D. Miall, H.R. Balkwill and W.S. Hopkins, Jr., 20 p., 1980.

79-32 Geology and coal resource potential of early Tertiary strata along Tintina Trench, Yukon Territory, by J.D. Hughes and D.G.F. Long. 21 p.

80-1B Current Research, Part B/Recherches en cours, Partie B, includes 41 reports, 17 of which deal with the North.

80-1C Current Research, Part C/Recherches en cours, Partie C, includes 43 reports, 12 of which deal with the North.

80-10 The Coastline of Canada, Littoral processes, and shore morphology, edited by S.B. McCann.

81-1A Current Research, Part A/Recherches en cours, Partie A, includes 60 reports, 34 of which deal with the North.

Maps

900A Principal mineral areas of Canada, 30th edition, 1980.

1509A Geology, Beaufort-Mackenzie Basin, District of Mackenzie and Yukon Territory, compiled by B.R. Pelletier. Scale 1:1 000 000

9-1978 Geology, Camsell Bend, District of Mackenzie, compiled by R.J. Hawes.

10-1978 Geology, Bulmer Lake, District of Mackenzie, compiled by R.J. Hawes. Lat. 62°00 to 63°00; Long. 120°00 to 122°00. NTS 951

13-1978 Surficial geology and geomorphology, Wrigley Lake, District of Mackenzie, by N.W. Rutter and A.N. Boydell.

15-1978 Surficial geology and geomorphology, Mills Lake, District of Mackenzie, by N.W. Rutter, G.V. Minning and J.A. Netteville.

12-1979 Surficial geology and geomorphology, Root

River, District of Mackenzie, by N.W. Rutter and A.N. Boydell.

5-1979 Surficial geology, Cross Lake, Manitoba, by R.W. Klassen and J.A. Netteville.

6-1979 Surficial geology, Grand Rapids, Manitoba, by R.W. Klassen and J.A. Netteville; scale 1:250 000

16-1979 Surficial geology, Banks Island (2 sheets).

17-1979 Northwest Territories/Géologie des dépôts meubles, Ile Banks, Territoires du Nord-Ouest par J-S. Vincent; Scale/Échelle: 1:250 000

Earth Physics Branch

Division of Geomagnetism

Responsibilities

The division provides information on the direction and intensity of the earth's magnetic field over Canada and adjacent ocean regions. It publishes magnetic charts of Canada and provides information for many other maps, including aeronautical and marine charts, concerning the angle between true north and magnetic north and its change from year to year. The division provides information on the structure of the earth's crust and reference fields for the interpretation of the more detailed commercial surveys carried out in exploration for minerals, oil and gas. The magnetizations acquired by rocks at their initial formation and during their subsequent history are analysed to learn when and how geological structures were formed. Knowledge of the evolutionary process is important in understanding how fossil fuel and mineral deposits originated and where they might be located.

The Geomagnetic Service records and analyses rapid variations of the earth's field, with periods measured in hours or seconds. Eleven magnetic observatories continuously record these changes in Canada. Three are in the auroral zone and four in the polar cap, north of the auroral zone. The rapid magnetic variations provide information on electric currents in the ionosphere and on the physical properties and dynamic behaviour of the magnetosphere. These studies have practical application in the North, in the fields of telecommunications, transmission of electric power, and the investigation of deep crustal structure by electromagnetic induction.

Review 1980-81

Magnetic observatories operated continuously through 1980-81 at Alert, Mould Bay, Resolute, Cambridge Bay, Baker Lake and Yellowknife. Recording of magnetic variations in digital form started at Igloolik, where the equipment is operated by personnel of the Department of Indian Affairs and Northern Development. Magnetic recording equipment, which had operated since 1976 at Pelly Bay, Rankin Inlet and Eskimo Point as part of the Churchill Chain of stations contributing to the International Magnetospheric Study 1976-79 (IMS), was shut down and removed in July, 1980.

Magnetic repeat stations at Inuvik, Norman Wells, Dawson and Igloolik were reoccupied to provide information on the secular change of the earth's magnetic field required for the updating of marine and air navigation charts. *The 1980 version of the magnetic chart of the Canadian Arctic, scale 1:7,500,000, was compiled for publication by the Canadian Hydrographic Service.*

Laboratory studies of paleomagnetic samples of sedimentary rock collected on Prince of Wales and Somerset Island neared completion. Lower Devonian redbeds were sampled on Cornwallis Island.

Plans for 1981-82

The six arctic magnetic observatories will operate throughout 1981-82. In the continuing program of secular change studies, magnetic repeat stations will be reoccupied at Frobisher Bay and Whitehorse. A reconnaissance paleomagnetic survey of Ellesmere and Axel Heiberg Islands will make a preliminary sampling of target areas on the two islands to detect any relative movements of the Ellesmere-Greenland system in Paleozoic time.

Division of Seismology and Geothermal Studies

Responsibilities

Seismological Service

The Seismological Service determines the parameters of all significant earthquakes in northern Canada and offshore areas and assesses earthquake risks. Research on the structure and properties of the arctic lithosphere is conducted by deep-sounding experiments, by surface wave dispersion studies and by study of seismic wave velocities from arctic earthquakes. Studies of the source mechanisms of earthquakes in active seismic zones provide data for investigations of seismotectonic processes and for calculations required for earthquake-resistant design. A network of seismograph stations is maintained in northern Canada and field experiments on deep seismic sounding are conducted.

Review 1980-81

Standard seismological observatories were operated at Alert, Mould Bay, Resolute, Frobisher Bay, Inuvik and Yellowknife and regional observatories continued operation at Baker Lake, Whitehorse and Igloolik. The three regional seismological observatories in the southwestern Yukon, near Dezadeash, Kluane Lake and Koidern, established in a joint venture with Foothills Pipe Lines (South Yukon) Ltd., continued to monitor low level seismicity in the region of the proposed ALCAN pipeline route. In a joint venture with Dome Petroleum, new seismograph stations were installed at Sachs Harbour and Tuktoyaktuk in December, 1980, to improve the seismicity monitoring of the Beaufort Sea. Yellowknife seismological array continued operation and the automatic data transfer facility continued to send digital information on detected seismic events to the Ottawa computer. Seismic data on global events detected at standard observatories are relayed via Ottawa through a computer link to the National Earthquake Information Service in the United States. The Yellowknife detection bulletin is transferred by computer link to research groups in the U.S. and U.K.

Analysis of all detected earthquakes in and near the Canadian North continued. Bi-monthly lists of all earthquakes are prepared about six months after their occurrence and findings are published. Rapid determinations are made of earthquakes of special concern or scientific interest, such as the earthquakes that were felt in Whitehorse July 3, 1980, Fort Wrigley February 20, 1981, and the magnitude 5 earthquake that occurred in Baffin Island September 3, 1980.

Research on seismic risk in northern Canada continued. Models of earthquake source zones and revised strong ground motion have been employed to derive new ground motion maps of peak acceleration and peak velocity. Research in cooperation with the Canadian National Committee on Earthquake Engineering is under way to code this information.

The special studies of the seismicity along the ALCAN pipeline route in the southwestern Yukon have been completed. The studies identified the most active seismic regions in the vicinity of the pipeline route and provided an improved earthquake source model for seismic risk studies.

The special studies of the seismicity of the Labrador Sea have begun. A data file of almost 50 earthquakes known in the Labrador Sea was compiled. Some of these events have been potentially damaging and located close to current areas of hydrocarbon exploration. The assessment is continuing of the seismicity data in the Labrador Sea.

Special studies of the Lomonosov Ridge in the Arctic Ocean basin have been completed. The studies have improved knowledge of the geological development of the Arctic Ocean basin and shown the Lomonosov Ridge to be composed of oceanic rocks that probably originated as a fragment of the European continental shelf broken off during the latter stages of the development of the arctic basin.

Plans for 1981-82

The three seismological observatories in the southern Yukon will be closed and a new observatory opened at Haines. In a joint venture with Dome Petroleum, additional stations will be installed around the periphery of the Beaufort Sea. The other seismological observatories in the North and the Yellowknife seismological array will be maintained. These facilities will continue to contribute important data to Canadian and international research projects.

The analysis and publication of northern earthquakes will continue on a current basis. Large potentially damaging earthquakes will be identified and reported. Detailed scientific studies of the larger northern earthquakes will continue as data and records become available.

The special studies of Labrador Sea seismicity will continue. The earthquake data file for the area will be assessed and re-evaluated. The correlation of seismicity and other geological or geophysical features will be studied. A high priority will be given to areas of current resource developments.

The new ground motion maps of northern Canada will be completed. These will provide a significant improvement over the 1970 seismic zoning map for seismic risk information on a regional basis in the North. As new information comes from special studies, improved earthquake source zones will be defined and risk assessment made more accurate.

Planning for the field experiment to study the Alpha Ridge in the Arctic Ocean basin (CESAR) in 1983/84 has begun and some of the preliminary staging of fuel to the North will be carried out.

Geothermal Service

Responsibilities

The Geothermal Service provides information on the thermal regime of the Canadian landmass as related to geotectonics, permafrost distribution and characteristics, the potential for geothermal energy development and the thermal properties of earth materials. Field measurements of subsurface temperatures and laboratory measurements of the thermal and heat generation properties of earth materials form the data base.

Review 1980-81

The acquisition continued of temperature data from deep northern boreholes with greater emphasis on the abandonment of wells as observations are now complete at many arctic sites. Proper abandonment of well-sites is a requirement. New boreholes were instrumented in the Keewatin, in the vicinity of Cameron Hills south of Great Slave Lake, and in several mining areas of Yukon. The results from these and other wells logged in 1980-81 are to be published as Geothermal Series 12. Interpreted permafrost thickness and subsurface temperatures from 113 well-sites now comprise the seven volumes of the northern data collection.

Studies of the shallow thermal regime of permafrost continued through field programs at Alert on Northern Ellesmere, at Illisarvik in the Mackenzie Delta, along the route of the proposed Alaska Highway chilled gas pipeline in the southern Yukon and in the more northerly Eagle Plains region. At Alert, the most northerly permafrost monitoring site in the world, observations of temperature, snow cover, density and thickness have, through the cooperation of the Department of National Defence and the National Research Council, been continued in five boreholes to depths of 60m for a period of two years.

Field investigations by the Geothermal Service at the Illisarvik drained lake site provide an additional dimension to laboratory experiments on moisture migration and permafrost growth, funded through the Energy Research and Development Program. Since 1978 the nature of the thaw bulb beneath the lake has been quantified. Post-drainage studies have indicated freezeback of the lake-bottom to a depth of 4m over two winters accompanied by 10 cm of heave. Studies by several universities are providing additional information on the pre-drainage history of the lake, post-drainage landforms developing and the revegetation of the lake-bottom.

The sites at Alert were chosen to cover various terrain types within easy access of the base.

The possible occurrence of natural gas hydrates in and below the permafrost both on- and offshore is of increasing concern. Approximately 40 wells in northern Canada are believed to have encountered hydrates although current detection methods need improvement. A small program is seeking to identify the hydrate-prone areas of northern Canada and through university contracts determine their physical characteristics and properties.

Plans for 1981-82

The program of geothermal studies will continue attempts to keep pace with the needs of increasing resource development. Contract investigations of moisture migration processes and gas hydrate properties will be continued. Field investigations at the Illisarvik drained lake site, at Alert and in Yukon will enhance the laboratory experiments on moisture migration and permafrost growth. A continued effort will be made in 1981 to visit deep northern wells and a number of these wells will be plugged at the surface as required.

Through symposia on northern development at meetings and conferences, contacts between government, industry and the international community will be nurtured and strengthened.

Gravity and Geodynamics Division

Responsibilities

The division completes the regional gravity survey of the Canadian landmass and offshore regions. In the far North, this work is performed in cooperation with the Polar Continental Shelf Project of EMR. Precise observations of gravity provide basic data for the mineral and oil exploration industries, for studies of sedimentary basins and for studies of the earth's crust and upper mantle. In addition, these observations provide data for geodetic studies and supply a need of the Department of National Defence. The division establishes gravity standards throughout Canada by maintaining a first-order network of gravity stations to serve as a reference and as control points for all regional and detailed gravity surveys. Also, the division maintains a data bank of all gravity data which meet national standards.

Review 1980-81

The gravity survey of McClintock Channel, begun in February, 1980, will be completed in April, 1981. About 2 400 stations will be established by helicopter on the sea ice. The operation was carried out in conjunction with the Canadian Hydrographic Service (CHS).

About 180 gravity and bathymetric stations were established in the littoral zone between Cape Henrietta Maria and Fort Severn in the southern part of Hudson Bay. The contracted survey was carried out by helicopter on the sea ice and covered a strip of shallow water up to 60 km wide between the southern boundary of the shipborne survey and the land survey.

Plans for 1981-82

In conjunction with CHS the gravity survey of Prince of Wales Strait will be completed. Survey activities will commence in March, 1982.

A gravity survey of the eastern arm of Great Slave Lake will be carried out under contract. This is the start of a long term program to complete the gravity survey of all Canadian major fresh water lakes.

To improve the precise level network in areas of high relief, a gravity survey will be carried out at precise elevation points along the Dawson-Whitehorse highway and on Highway 9 from Carmacks to Watson Lake. This work will also be done by contract.

A search for meteorites will be conducted along the Devon Island Icecap as well as on the ice-covered highlands south of Smith Bay in southeast Ellesmere Island.

A geological and geomagnetic survey will be carried out on the Haughton Impact structure on Devon Island. One of the aims of the study is to determine how close to the surface the Precambrian basement has risen.

The last two programs will be supported by PCSP.

Geodynamics

Responsibilities

The Geodynamics group develops a better understanding of the dynamics of the solid earth and associated natural and induced geophysical hazards, and ensures the availability of crustal deformation, earth rotation and polar motion data for the Canadian landmass. The group also provides, as required, scientific coordination of major multidisciplinary studies of major features of Canada's arctic offshore regions.

Plans for 1981-82

A proposal for a multidisciplinary survey of the Alpha Ridge in the Arctic Ocean has been prepared. The operation, code-named CESAR 83, for Canadian Expedition to Study the Alpha Ridge, will be similar in nature and scope to LOREX 79, and, if approved, will take place in 1983.

Resource Management Branch

Responsibilities

The Resource Management Branch administers and manages mineral resources in Hudson Bay and Hudson Strait. The branch exercises comprehensive statutory authority and regulatory control over the exploration for and development of mineral resources of these and other offshore regions.

The disposition of oil and gas rights on these Canada lands is governed by the *Canada Oil and Gas Land Regulations*, promulgated under the *Public Lands Grants Act* and the *Territorial Lands Act*. The authority for supervision and control of oil and gas activities to ensure safety of human life, protection of the environment and conservation of resources is provided by the *Oil and Gas Production and Conservation Act* and operational regulations.

The administration and disposition of minerals other than oil and gas is governed by the *Canada Mining Regulations* also promulgated under the *Public Lands Grants Act* and the *Territorial Lands Act*.

Review 1980-81

As of March 31, 1981, the branch administered 62 exploratory permits for oil and gas in Hudson Bay. All of these permits are situated in northern Hudson Bay in the vicinity of Mansel and Southampton Islands, where exploration for oil and gas has been suspended since 1971 at the request of native inhabitants. The branch also administered 22 oil and gas leases in the centre of the bay.

No offshore drilling operations have been undertaken in Hudson Bay or Hudson Strait since 1974. The last marine seismic program was carried out in 1975. The most recent oil and gas exploration of any kind, an air magnetometer survey, took place in 1976. During 1965-1976, the petroleum industry spent some \$41 million for exploration in Hudson Bay and Hudson Strait, including \$22 million for drilling and \$19 million for geophysical surveys.

In an effort to reactivate oil and gas exploration in Hudson Bay, the branch published a Call for Proposals on September 13, 1980, inviting tenders for work programs on four separate blocks covering about 29 ha in aggregate. No proposals were received by the November 17 deadline. However, the Regulations state that within 90 days of the latter date, the Minister may enter into exploration agreements. Representatives of a group of companies commenced negotiations with the branch within this period. It is hoped that these negotiations will be successful and that offshore exploration may be resumed in Hudson Bay in 1981 or 1982.

Canada Centre for Mineral & Energy Technology

Responsibilities

CANMET research and development on steels for use in arctic pipelines is divided into three main areas; pipeline fabrication methods, pipeline degradation and inspection, and pipeline steels development and evaluation.

Review 1980-81

In pipeline fabrication, assessments have been made of the mechanical properties of mill welds at temperatures as low as -50°C and of the field weldability of steels for use in arctic pipelines. The technology of automatic welding for large-diameter pipe has been reviewed.

Studies have been actively pursued into the ways in which pipelines can be degraded in service, work in hydrogen damage, stress-corrosion cracking, and corrosion fatigue of line-pipe steels. Residual stress measurements have been determined in large-diameter line pipe. Pipeline inspection procedures and techniques ensure that pipelines operate reliably. In-house research on the effects of mechanical damage has been buttressed by contractual work on inspection methodology and instrumentation.

Work on evaluating the toughness of bronze alloys from which ships' propellers are cast has shown that the impact strength of some bronze alloys is very low. Details of the mechanism responsible for the effect must be better understood before possible remedial treatment can be devised. An experimental survey of atmospheric corrosion in the arctic has been completed.

Plans for 1981-82

The increasing presence of ships in ice-infested waters will highlight work currently under way to evaluate and review the fracture properties of ship plate destined for arctic use.

In 1981-82 CANMET, in conjunction with the Department of Fisheries and Oceans, will conduct research to evaluate the corrosion resistance of a variety of commercial alloys in the waters of Barrow Strait. In other corrosion related work, a study will be made on the corrosion of welds in ice-breaking ships.

CANMET will continue work on the effect of mechanical damage on operating performance of arctic pipelines. There will be an expansion of existing activity on the development of improved high strength steels for pipelines to be used in the arctic. Work will continue on the development of bronze alloys for ships' propellers.

Canada Centre for Remote Sensing

Responsibilities

The Canada Centre for Remote Sensing (CCRS) develops and coordinates a national program to produce remotely-sensed data and derive information for the management of Canadian natural resources.

Review 1980-81

CCRS continued its development of surveillance systems to support petroleum exploration in ice-infested arctic waters. CCRS supported commercial mineral exploration projects and has cooperated, through the loan of analysis equipment, with the Yukon government in performing multidisciplinary studies in forestry and wildlife.

Mineral exploration studies involved the use of LANDSAT data to search for discrete geological and structural detail, possible identification of mineralization zones and tectonic analysis related to lead-zinc-bearing black shale.

Spaceborne and airborne radar and other microwave devices were used in the Beaufort Sea and in the Davis Strait areas to analyse sea-ice packs. The CCRS Convair 580, equipped with a synthetic aperture radar (SAR) which can be used to identify numerous ice, water and land features, gathers information for marine navigation. For example, it can identify areas of shore-fast ice composed primarily of first-year sea-ice, one to two meters thick. Linear pressure ridges can be seen within the shore-fast zones as well as areas of open water. Ice forming the main polar pack, made up of large flows up to 20 km in diameter, can be easily identified. The importance of this information will grow with the advent of significant shipping volumes in the 1990's to transport oil and liquefied natural gas from the arctic.

The Convair 580 was operated under contract during the period of ice formation in 1980 to guide ice breaker operations for CANMAR, the drilling subsidiary of Dome Petroleum Ltd. This mission employed a data downlink to transmit SAR imagery to ships for operational use in real-time. It was possible to identify heavily ridged areas in young ice as these flows approached the drill ships. The supporting icebreaker and supply vessels could be deployed to break up the thicker ice. When the fleet was returning to harbour at the end of the drilling season, the SAR imagery was used to select a route. This experience proved that SAR can provide valuable support for arctic operations.

Plans for 1981-82

In September, 1980, the Surveillance Satellite (SURSAT) project office submitted recommendations to Cabinet regarding the information of a radar satellite for monitoring human activities in the arctic.

In March, 1981, CCRS received approval to proceed with a project called RADARSAT which is intended to develop microwave sensors as part of an operational surveillance satellite for Canadian use. Convair 580 SAR data will determine the active and passive microwave signature of sea-ice during breakup, melt season and freeze-up. Other experiments will be centered on the development of a real-time profiling microwave sensor for distinguishing sea-ice types. A strategic objective of these experiments will be to assist Canadian industry to develop technological experience base in the critical area of coherent microwave system fabrication.

Mineral Policy Sector

Responsibilities

The Mineral Policy Sector assists in the development of federal policies on mineral resources. It deals mainly with non-energy mineral resources and the contribution which these make to the economy. Policy advice is based upon intelligence gathering and data analysis.

Review 1980-81

The Mineral Policy Sector had special study groups representing federal and territorial governments, industry, and interdepartmental committees. These groups included: The Northern Mineral Advisory Committee; The Northeast Mackenzie District Transportation study; a review and evaluation of the potential for the development of a Yukon barite supply and related socio-economic impacts. Special studies or projects initiated by the sector, or to which the sector contributed, on the North included:

- investigation of the economics of different processing technologies applicable to Yukon lead-zinc ores.

- the on going monitoring of the reserves and production of Canada's non-ferrous metal mines. This resulted in publication of two documents which will be available in early 1981-82: *Canadian Reserves of Copper, Nickel, Lead, Zinc, Molybdenum, Silver and Gold as of January 1, 1980*; and *Perspective from 1980*.
- MRI 80/5, Canadian Ore Discoveries 1946-1978 - A Continuing Record of Success.
- MRI 80/8, Imported Mineral Raw Materials; Guidelines for Research Policy.
- the report MRI 80/10, The Effect of Smelter-Refinery Location on Transportation Costs for Yukon Lead and Zinc Production which was completed during the year and published in May.
- MRI 80/18, Some Common Regional Constraints to Mine Development includes specific comments on northern mines. It was published in August.
- studies of regional mining exploration trends and related publication MRI 80/21, Non-Fuel Mineral Exploration in Canada to 1985.

The Mineral Policy Sector chairs the Federal-Provincial Mineral Statistical Committee which includes participation by the territorial governments. In cooperation with Statistics Canada, the Mineral Policy Sector compiles and publishes annual mineral statistics, including northern mines. Also, a statistical report entitled *Production of Canada's Leading Minerals* was published monthly.

Some entries in the National Mineral Inventory card file on northern mineral occurrences and deposits were updated, new cards were added and some cards were consolidated. The number of cards in the file increased from its 1979-80 total of 2 300 to 2 377 at the end of March, 1981. A computer index file system called MINSYS was implemented during the year.

MRI 80/7, Canadian Mineral Deposits Not Being Mined in 1980 was released in May. Of the 1 350 deposits for all of Canada, 150, or 11 per cent, are from Yukon and Northwest Territories. An update of this publication is in preparation.

The Mineral Policy Sector has been advising the negotiators on Comprehensive Native Claims about matters concerning non-renewable resources.

Plans for 1981-82

The sector will continue to gather data bearing upon northern mineral development. Advisory assistance to study groups on transportation and northern minerals policy will be given. The sector's involvement in Comprehensive Native Claim negotiations will be significant. Policies being developed by the territorial governments and Indian Affairs and Northern Development that affect the non-energy minerals industry will be monitored.

Surveys and Mapping Branch

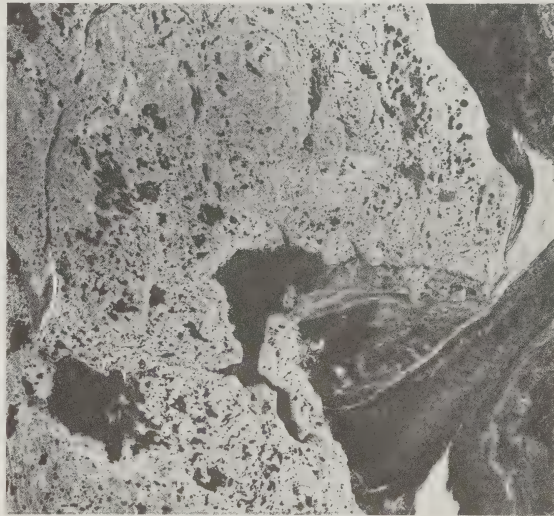
Responsibilities

The Surveys and Mapping Branch provides geodetic, topographic and geographic information on the Canadian landmass through production and distribution of maps, aeronautical charts, aerial photographs, the National Atlas of Canada, the Canada Gazetteer Atlas and gazetteers of place names. The branch also ensures that national, provincial and territorial boundaries are correctly positioned, marked and maintained.

Surveying Crown lands (national parks, Indian Reserves and territorial lands) is an added responsibility of the branch. Scientific and technical support is provided to other federal and provincial government departments and agencies.

The branch has seven units: Branch Headquarters, Geodetic Survey Division, Legal Surveys Division, Topographical Survey Division, Reproduction and Distribution Division, the International Boundary Commission and Geographical Services Directorate.

The branch director-general is chairman of the Interdepartmental Committee on Air Surveys. The branch also provides the secretariats for the Canadian Council on Surveying and Mapping and the Canadian Permanent Committee on Geographical Names.



This is Cambridge Bay, NWT, as seen from SEASAT.

Geodetic Survey Division

Responsibilities

The Geodetic Survey maintains and expands national survey networks to meet the needs of provinces, industry and federal agencies. These surveys are used for environmental studies, engineering and geoscience reports, national security and national mapping.

Review 1980-81

A highlight of 1980 was the completion of a 400 km first-order level line along the Canol Road in the NWT from Norman Wells to the Yukon border. This completed a link of first-order levels between Norman Wells and Ross River. Thirty-four Doppler Satellite points were established on Victoria and adjacent islands in the arctic. A further 22 points in the southwest Yukon, and five in the vicinity of Yellowknife were also positioned by Doppler Satellite.

The Inertial Survey System provided 4050 km of traversing on Victoria Island for 1/50 000 mapping. This was the first known occasion when inertial surveying methods were used in high latitudes. Conventional survey methods for second-order traversing provided a further 450 km of traverses on Melville and Victoria Islands. In the Yukon, north of Watson Lake, 590 km of altimeter traversing produced vertical mapping control for an area of 11 000 km².

Plans for 1981-82

In the arctic islands efforts will be concentrated on Bathurst, Cornwallis, Prince of Wales, Devon and Victoria Islands. This will involve strengthening existing surveys and the addition of new survey work. The principal methods used will be Doppler Satellite to provide about 65 points and the Inertial Survey System to traverse about 2900 km. In addition, airborne photography will be used to photo-identify about 200 survey points for mapping purposes. Altimetry will be used to supply about 400 km of traversing for mapping on Devon Island and an additional 1000 km to the east of Hay River, NWT. In the Yukon, 1500 km of altimeter traversing will be conducted east of Whitehorse, and a similar but smaller project will be conducted near Mayo.

Legal Surveys Division

Responsibilities

The division carries out surveys for land or resource transactions connected with the administration and development of public or other lands. It ensures the competence of the property surveys, land descriptions and plans made under the Canada Lands Surveys Act and other acts and regulations. The division fulfills the federal obligations regarding definition, survey and maintenance of provincial and territorial boundaries in Canada. Through its regional offices in Whitehorse and Yellowknife, the division provides survey related advice and assistance to local government officials and the public as required.

Review 1980-81

Yukon Territory

Legal Surveys were carried out at Dawson City, Carmacks, Old Crow, Beaver Creek, Mayo, Little Salmon Indian Reserve and McQuester Indian Reserve as well as the retracement of portions of three base line surveys established under the Yukon Placer Mining Act (YPMA). Survey work was also carried out at Ross River, Teslin and Whitehorse. The Whitehorse regional office examined 30 survey plans prepared by private practising surveyors under the Land Titles Act and in January, 1981, the responsibility for regulating surveys of Canada lands in the Yukon was transferred to them from headquarters in Ottawa.

They also have a microfilm index of all aerial photography in the National Air Photograph Library (NAPL) covering the Yukon and computer terminal access to the Geodetic Control Data Bank in Ottawa.

Northwest Territories

Thirty-five summer residential lots were surveyed in the Yellowknife area for the Department of Indian Affairs and Northern Development. Other legal surveys were carried out at Pond Inlet and Lake Harbour on Baffin Island. Control surveys for the territorial government's community mapping program were carried out at Lake Harbour, Pangnirtung, Pond Inlet and Spence Bay. The Yellowknife regional office examined 30 survey plans prepared under the Land titles Act by private practising surveyors and in January, 1981, the responsibility for regulating surveys of Canada lands in the Northwest Territories was transferred to them from Ottawa headquarters. They also have a microfilm index of all aerial photography in the NAPL covering the Northwest Territories and computer terminal access to the Geodetic Control Data Bank in Ottawa.

Plans for 1981-82

Yukon Territory

The main activity will be related to surveys of base lines and claims under the YPMA and the regulation of surveys of Canada lands. A few isolated lots and a portion of the Yukon-Northwest Territories boundary will also be surveyed.

To ensure that the high quality of surveying is maintained the division will continue its programs of inspecting surveys and of maintaining existing Coordinated Survey Areas.

Northwest Territories

Approximately 25 summer residential lots will be surveyed in the District of Mackenzie for DIAND. The Hay River and Yellowknife Coordinated Survey Areas will be inspected and targets will be placed on selected coordinate control monuments in Yellowknife and Inuvik to provide control for new aerial photography. The Yellowknife regional office will also regulate the surveys of Canada lands within the Northwest Territories and examine survey plans under the Land Titles Act.

Topographical Survey Division

Responsibilities

The division produces and maintains topographic maps of Canada for general purposes at scales of 1:250 000 and larger, appropriate to the needs of resource development, regional and urban planning, environmental management, engineering construction, national defence, and recreation. It provides technical advice to the Canadian International Development Agency and other government departments and agencies on mapping projects, and provides technical and administrative support to the Interdepartmental Committee on Air Surveys.

Review 1980-81

A total of 30 000 km of aerial photography was flown in the North for 1:50 000 mapping. Indexes showing present status of aerial photography may be obtained from the National Air Photo Library. Topographic map indexes are available from the Canada Map Office, both located at 615 Booth Street, Ottawa, Ontario, K1A 0E9.

In the North, 556 new 1:50 000 maps were completed and 51 maps at the 1:250 000 scale were overprinted with revisions. In northern Canada some maps were revised by the addition of data located on LANDSAT imagery.

Plans for 1981-82

It is anticipated that 370 new and 105 revision 1:50 000 map sheets of areas in northern Canada will be produced. With the aid of the Department of National Defence, 57 1:250 000 scale map sheets will be revised in 1981-82, and 19 000 km of photography will be ordered for 1:50 000 mapping in the Northwest Territories and Yukon Territory.

Normally about 65 per cent of the photography ordered in the North is successfully completed.

Reproduction and Distribution Division

Responsibilities

The Reproduction and Distribution Division does photo-mechanical, phototypesetting, lithographic printing and bindery services for the Surveys and Mapping Branch's mapping products. It also provides, through the Map Reproduction Centre, reproduction support services to other federal and provincial government departments and agencies, municipal and private sector users, on a cost recoverable basis.

It is also responsible for the storage, retrieval, mail order sales and distribution of all topographical and thematic maps, aeronautical charts and publications produced by the Surveys and Mapping Branch and specialized maps acquired from other federal government departments. Canada Map Office also maintains and supports an authorized topographical map and aeronautical chart dealer network throughout the world.

A third responsibility is the National Air Photo Library (NAPL). NAPL indexes, sells and distributes products and information related to federally-owned or controlled aerial survey, airborne remote sensing and satellite imagery.

Review 1980-81

The division printed 347 line maps and 16 photomaps of the National Topographic Series. There were two maps reprinted of Federal Electoral Districts. Printing services were provided to Environment Canada for 31 Northern Land Use Information Maps, four maps for the Glacier Atlas of Canada and two maps showing Water Quality Stations and Relief of the Mackenzie River Basin. Services were also provided to the Canadian Hydrographic Service of Fisheries and Oceans for printing of 37 charts of northern waters.

Five maps of the International Map of the World Series were printed which gives full coverage of this series for the North.

The Canada Map Office received 750 orders for maps and charts from Yukon and Northwest Territories for a total value of \$75 400.

Twenty-nine requests for air photo products and services from Yukon Territory for \$10 625 and 38 from the Northwest Territories for \$13 951 were processed.

Regional microfilm centres were established in the Legal Surveys Division's regional offices at Yellowknife, NWT, and Whitehorse, Yukon. Each centre was provided with a microfiche reader, a microfilm cartridge reader, coverage catalogues for Canada and microfiche and microfilm cartridges. These centres appreciably increased the use of maps, charts and aerial photographic products over 1979-80.

Plans for 1981-82

The Map Reproduction Centre will provide reproduction and support services. The number of items to be printed will depend on the producing areas of the branch and the demands of other government departments.

The map and chart consignment centre in Yellowknife will be transferred to the Legal Surveys Division regional office. It is expected that the transfer will be complete and the map sales office in operation by the end of May, 1981.

Through Legal Surveys regional offices in Yellowknife and Whitehorse, a concerted effort will be made to disseminate information regarding the availability and use of maps, charts, aerial photographic products and other Surveys and Mapping Branch Services.

International Boundary Commission

Responsibilities

The work of the commission is largely boundary maintenance and regulation of works within three metres of the boundary. The commission determines the position of the boundary should questions arise between the governments of Canada and the United States.

Review 1980-81

There was no boundary maintenance required for that part of the boundary north of 60°.

Geographical Services Directorate

Responsibilities

The directorate designs and produces small scale maps, The National Atlas of Canada, aeronautical charts and flight information publications, toponymic (geographic names) service, and provides cartographic support services to federal and provincial departments and private agencies.

Review 1980-81

During the year, the first results of the new direction of The National Atlas of Canada became available in the form of data base maps at the scale of 1:2 M of regions of Canada, and publication scale maps at 1:5 M and 1:7.5 M. The maps in the first category will not be printed and published but will be made available on "open file". All maps are designed for rapid correlation of different subjects by overlay methods so that combinations of geographical subjects can be made on demand to study particular phenomena affecting the country as a whole or its regions. The 1:7.5 M and 1:5 M scale maps portraying the country as a whole will be multi-coloured. Those now completed are available from the Canada Map Office.

Maps completed for the National Atlas included themes on agriculture, climate, international relations, federal harbour facilities, federal election results, Indian and Inuit communities and languages, and a general reference map of Canada.

The Canada Gazetteer Atlas was published.

Six maps were completed depicting geodetic control networks in Canada, including the North.

Gazetteers were completed for the Northwest Territories and the Yukon.

Also produced were two maps depicting taxation district boundaries for Revenue Canada, two maps for Health and Welfare Canada depicting medical facilities, and one map for Environment Canada depicting the Mackenzie River Basin.

Aeronautical charting activity in the Canadian North during 1980-81 included the production of seven revised aeronautical chart base maps at 1:500 000, 51 air information overprints and aeronautical information overprints on 1:1 000 000 charts.

A Visual Flight Rule (VFR) Aeronautical Strip Chart, at a scale of 1:500 000 was revised covering the Alaska Highway between Fort Nelson and Northway, Alaska.

The High and Low Altitude Enroute Chart series continued, as did the Instrument Flight Rule (IFR) Supplements, Northern Supplements and Water Aerodrome Supplement publication. The Canada Air Pilot, Designated Air Space Handbook and Flight Planning and Procedures publications, all with portions relevant to the North, were produced.

Plans for 1981-82

Directorate plans for mapping activities in the North include the cartographic completion of 24 maps for The National Atlas of Canada, at data base scales of 1:2 M and publication scales of 1:5 M and 1:7.5 M. These are on the themes public fish hatcheries, oil and natural gas pipelines, coal, road transportation, Indian and Inuit communities, Indian and Inuit population distribution, time zones, Canada at Confederation, Native peoples (1630), solar radiation, heating and growing degree days, frost, population distribution, drainage basins, cities, towns and villages, and electricity.

Aeronautical charting products will include four revised aeronautical chart base maps and 55 air information overprints, along with continued production of Enroute Charts, IFR Supplements, Northern Supplements and the Canada Air Pilot. The VFR Aeronautical Strip Chart covering the Alaska Highway will be revised.

Polar Continental Shelf Project PCSP

Responsibilities

The Polar Continental Shelf Project conducts scientific investigations unique to the arctic and maintains and improves logistic support systems for science in the arctic. This demands the provision and maintenance of base camps, a radio network and aircraft with experienced crews. PCSP supports field research within the mandate of EMR and other government departments. Field resources of the branch are also made available to approved university and other non-government research projects.

Review 1980-81

Field work was carried out from mid-February to late September. It was coordinated from Tuktoyaktuk in the Mackenzie Delta and from Resolute on Cornwallis Island.

A total of 166 scientific field parties were supported in the arctic. The major hydrographic program for 1980 was in M'Clintock Channel using through-the-ice sounding techniques with ram devices mounted on helicopters. Over 11 000 spot soundings were made. Logistical support for this project taxed PCSP resources because several hundreds of Twin Otter hours were required as unusual sea ice conditions prevented the use of larger freighter aircraft. The usual large complement of archeological, wildlife and geological parties persisted in their evaluation of the resources of the arctic. Scientific activity in the Canadian arctic is presently divided between the east and west on a basis of about 2:1.

The following agencies were supported in their arctic research in 1980: Arctic Institute of North America, British Royal Navy, Cascadia Research Collective, Defence Research Establishment Pacific, Department of Agriculture, Department of Energy, Mines and Resources Canada, Environment Canada, Department of Fisheries and Oceans, Department of Indian Affairs and Northern Development, Government of the Northwest Territories, Government of the Yukon, Milwaukee Public Museum, National Museums of Canada, New Bedford Whaling Museum, Norsk Polar Institut, Sir Sanford Fleming College, Swiss Federal Institute of Technology, Transport Canada, U.S. Navy Research Laboratory, Universities of Alberta, British Columbia, Brock, Calgary, Concordia, Guelph, Hokkaido, McGill, McMaster, Ottawa, Toronto, Victoria, Washington, Waterloo, Western Ontario, Wilfrid Laurier, Windsor, Wisconsin.

The following summarizes work to which PCSP contributed support.

*Archeology: Banks and Victoria Islands**Investigator: C.D. Arnold, University of Toronto*

The archeology of the western Canadian arctic may be essential to an understanding of prehistoric developments in arctic Alaska and the eastern Canadian arctic. By studying intermediate areas such as southeastern Banks Island and Natkusiak Peninsula on northern Victoria Island, a tie between the two extreme points may be defined. Archeological materials recovered at both sites date primarily to Thule and later occupational episodes.

*Archeology: Stanwell-Fletcher Lake, Somerset Island**Investigator: E. Bielawski and S. Cole, University of Calgary*

In 1980 the Northern Cultural Heritage Project was extended to more students and northern residents. The integration of research, teaching, and training is the objective of this project. Discrete features were selected for sampling to allow concentration on the problem of changing at a single camp site. Artifacts have been recovered from Pre-Dorset through Dorset culture. Excavation at this site will continue through 1982.

*Archeology: Brooman Point, Bathurst Island**Investigator: E. McGhee, National Museum of Man*

Work at Brooman Point concentrated on completing the excavation, begun in 1979, of four Thule houses, excavating an additional five smaller houses, and continued excavation in the areas surrounding the village. This produced recovery of 1360 artifacts, bringing a total from the site to 2655 artifacts and samples. The vast majority of these relate to a late Dorset and an early Thule occupation of the site. At the conclusion of the season, all excavated areas were backfilled. The excavated whale bones were on site for use by local carvers.

*Archeology: Northern Ellesmere, Cornwallis and Somerset Islands**Investigator: C. Phillips, Parks Canada, Environment Canada*

The remains of several Franklin search cache sites and one J.E. Bernier sovereignty expedition site were recorded in the Barrow Strait area. On the northeast coast of Ellesmere Island, R.E. Peary sites from 1905-06 and 1908-09 and the British Arctic Expedition site of 1875-76 were recorded at Floeberg Beach south of Alert. Artifacts such as pilot bread and pemmican were recovered. At Sail Harbour, Peary artifacts from the sledge journeys of 1905-06 and 1908-09 were found along the eastern shore. Several other sites in Lancaster Sound/Barrow Strait were visited, mapped and collected.

*Archeology: Northern Prince of Wales and Russell Islands**Investigator: P.G. Ramsden, McMaster University*

Cape Walker on Russell Island was visited to investigate a reported Thule site consisting of tent rings and semi-subterranean houses. In addition, it was hoped that surveys in the area would produce evidence of earlier occupations. The field work in 1980 proved disappointing. However, surveys in three localities, and at Back Bay, showed the presence of substantial prehistoric occupation, particularly by Paleo Eskimos.

*Archeology: Nunguvik and Seatut, Navy Board Inlet**Investigator: G. Mary-Rousselière, Pond Inlet*

The primary interest was to investigate the structural characteristics of the dwelling at Nunguvik, but in the process more than 1,000 artifacts were found. None of these could be called exceptional, although they included a small amount of ivory, antler and wooden carvings, and a wooden piece identified as part of an umiak. Also found were wooden harpoon heads with slots for an end blade, a sealskin mitten and a wooden blade protector. A chert adze blade was found, a rare occurrence at Nunguvik. At the Seatut site 95 artifacts were found, the most interesting feature being six Dorset harpoon heads lumped together. Seatut was predominantly a sealing camp while Nunguvik was a hunting camp.

*Archeology: Somerset, Prince of Wales, Russell and Cornwallis Islands**Investigator: J.M. Savelle, University of Alberta*

Field investigations were conducted during 1980 to determine the extent of 19th century Netsilik Inuit occupation north of the ethnographically-documented "core" area on Boothia Peninsula and the relationship to 19th century European exploration. The results suggest that while such occupations apparently did take place, they were limited in duration and appear to have been directed toward the procurement of material from abandoned ships and/or caches. Substantial Paleo Eskimo and Thule occupations were discovered, the former in the Back Bay region of Prince of Wales Island and at Fury Point on Somerset Island and the latter at Aston Bay, Somerset Island.

*Archeology: Bache Peninsula, Ellesmere Island**Investigator: P. Schledermann, Arctic Institute of North America*

The principal areas of investigation were: the large site area on the northeast coast of Knud Peninsula; Thule culture and AST sites on Skraeling Island; the late Thule culture house ruins on Haa Island, and the early Dorset site ("Baculum site") just east of Alexandra Fiord. In addition, shorter side trips and site surveys were conducted on foot, by boat and by helicopter. Otto Sverdrup's camp, Fort Julian, was located on the south coast of Knud Peninsula. Work in the extensive Knud Peninsula region produced a large amount of fine data, spanning most of the prehistoric occupation periods in the high arctic. Hearth features within a longhouse have been identified. Many interesting artifacts were recovered such as skin parkas, mukluks, bone ornaments, needle cases, harpoon heads.

*Archeology: Axel Heiberg and Ellesmere Islands**Investigator: P. Sutherland, McMaster University*

Fourteen features at Buchanan Lake site were investigated because it contained a late Dorset and Thule component and might prove transitional in terms of the Dorset and Thule occupations. Preliminary results indicate a fall/winter occupation with heavy reliance on land mammal resources. Eight clearly-defined sites at Very River near Lake Hazen did yield good material. Some Paleo Eskimo sites were investigated in the area. Remus Creek on Slide Fiord was also visited and disclosed bone material. Some medieval Norse material had been found at this site in 1977.

Biology: Entomology, Tuktoyaktuk**Investigator:** R.A. Ring, University of Victoria

Successful overwintering by insects that inhabit Canadian arctic regions depends on a number of factors which have important ecological, behavioral, physiological and biochemical components. This research project will continue to study supercooling and frost tolerance in arctic insects. Experimental evidence indicates that glycerol is synthesized mainly from carbohydrate reserves.

Biology: Ornithology — migratory birds, Victoria Island**Investigator:** L. Allen, Environment Canada

A migration watch provided data on the number of species and direction of migration of birds through Dolphin and Union Strait during spring. The study was conducted on Western Victoria Island to determine distribution, density and species composition of birds in the vicinity of the proposed pipeline. The common eider was the most abundant species as more than 18 000 were counted. Other relatively-abundant species were the Canada goose, brant, king eider, oldsquaw, glaucous gull and arctic tern. The yellow-billed loon was the most common loon observed. The majority of migrating birds flew parallel to the shores of the strait in a southeasterly direction. Ten nesting peregrine falcons were found north of Holman. Very few birds were found inland on Victoria Island.

Biology: Ornithology — sea birds, Beaufort Sea**Investigator:** P.N. Boothroyd, Environment Canada

A preliminary assessment was made of the potential impacts of harbour development on migratory birds at McKinley Bay and Baillie Island. Aerial and ground surveys were conducted to determine migratory bird use, habitat distribution and sensitivity to industrial development. The risk of fuel spills, disturbance caused by aircraft overflights and possible harassment and hunting resulting from increased human presence were identified as the most major concerns. Possible mitigation measures were recommended.

Biology: Ornithology, Hudson Strait**Investigator:** A.J. Gaston, Environment Canada

Previous studies on thick-billed murre colonies in Lancaster Sound have given a broad outline of breeding ecology. Observations at Digges Sound in 1980 provided little deviation from the pattern observed elsewhere, except in the large volume of eggs laid and the low weights of chicks at 14 days old and at fledging. The observed effects of weather conditions on attendance patterns also contrast with findings at Prince Leopold Island, suggesting that weather may cause as much as a third of variation in numbers counted on the cliffs. Raven predation on eggs and chicks was much higher than has been observed at any other murre colony.

Biology: Ornithology — sea birds, Penny Strait**Investigator:** S.D. MacDonald, National Museum of Natural Sciences

A two-day census was conducted by helicopter of the Penny Strait area and adjacent polynias. All species such as the common eiders, oldsquaws, loons and gulls were nesting, but in smaller numbers than previous years. Ringed and bearded seals were less abundant, but the number of polar bears remained constant. Ross's gull did not nest and only a single pair were present.

Biology: Ornithology — falcons, northern Yukon**Investigator:** D.H. Mossop, Yukon Government

In 1980 the last known breeding pair of tundra peregrine disappeared with the loss of the male. There is evidence of an additional single bird occupying one other historic site. The history of this decline has been well documented. The loss of this breeding population is particularly distressing as it is the only tundra-breeding population and, presumably, the only tundrus group in Yukon. An attempt is currently under way at Whitehorse to breed tundra peregrines in captivity.

Gyrfalcon research involved measurement of various population parameters vital to devising management criteria. One experimental removal was conducted to monitor the effects of harvest on population dynamics in the species.

Biology: Ornithology, Yukon Coastal Plain**Investigator:** H. Ouellet, National Museum of Natural Sciences

A total of 106 species were recorded in the area, some for the first time. Most notable was the first documented occurrence record for Canada of the red-throated pipit (*anthus cervinus*), a palearctic species, known to nest in North America only in western Alaska. More than 500 specimens were collected for taxonomic studies.

Biology: Ornithology — greater snow goose, Foxe Basin and Gulf of Boothia**Investigators:** A. Reed and P. Dupuis, Environment Canada

This was the second of a three-year study to update knowledge on the distribution of the expanding population of the greater snow goose and Atlantic brant, through the use of leg bands, and to study the extent of overlap of wintering and staging areas of birds from different breeding sites. Miscellaneous studies made included: continued reconnaissance of potential goose habitat in the eastern arctic; examination of snow geese from a newly-discovered breeding site on the Melville Peninsula; banding and radio-marking of a small sample of greater snow geese from northern Baffin Island; and continued recording of ornithological observations in the eastern arctic.

Biology: Zoology, muskox, Ellesmere Island**Investigator:** D.R. Gray, National Museum of Natural Sciences

Observations on the behaviour of muskoxen were made in Sverdrup Pass. Twenty-three muskoxen were seen. Of this total seven were adult females, four adult males, two sub-adult males, four yearlings and six calves. Most of these muskoxen remained in two herds which joined together for only two days. Behaviour patterns were documented on 16 mm colour film.

Biology: Zoology, bowhead whales, Beaufort Sea**Investigator:** L. Hobbs, N.O.A.A., U.S. Department of Commerce

Studies have been initiated by N.O.A.A. to assess and predict the effect of oil and gas development on marine mammals in the Beaufort Sea. Attempts were made to radio tag these large mammals to observe movement, activity patterns, habitat use and behaviour. The ultimate step will be to track these mammals via satellite. The radio tagging operations were partially successful.

Biology: Zoology, porcupine caribou, northwest Yukon
Investigator: A.M. Martell, Environment Canada

The study seeks to determine the physical and biological characteristics of areas used for calving and to determine the daily activity pattern and habitat selection of caribou while on their summer range in the northern Yukon. A total of 1975 scans were made at 15 minute intervals to document daily activity pattern and habitat selection and 104 hours of continuous observations of caribou were made for more detailed examination. Vegetation communities were sampled regularly.

Biology: Zoology, porcupine caribou, Dempster Highway
Investigator: F.L. Miller, Environment Canada

Migration trails were followed, west (north) and east (south) of the highway to document crossings of the Dempster Highway. Of 513 crossings recorded, 75.4 per cent (387) crossed the highway directly. The remaining 24.6 per cent (126) crossed the highway indirectly travelling short distances along the road before leaving it on the opposite side. No sign was seen of caribou doubling back on their trails and not crossing the road after they were once on the road. This most likely suggests that the observed trails were made in the absence of traffic. Few caribou wintered east (south) of the highway in the 1979-80 winter and most caribou had begun to move northward before April, 1980.

Biology: Zoology, Peary caribou, Prince of Wales Island
Investigator: F.L. Miller, Environment Canada

The summer of 1980 saw the completion of this project. A preliminary compilation indicated that 588 caribou trails were located and the tracks of at least 1799 individual caribou were found on the sea ice. The direction of inter-island movements was predominantly from east to west, from Somerset Island and northern Boothia Peninsula to Prince of Wales Island. There appeared to be more inter-island crossing of caribou from the southeast coast of Somerset Island to Prince of Wales Island than in springs 1978 and 1979. Otherwise, the patterns of springtime inter-island movements of caribou in the study area were in agreement with those observed in 1977, 1978 and 1979.

Biology: Zoology, porcupine caribou, Dempster Highway
Investigator: D.E. Russell, Yukon Government

Historically, caribou found in the Hart Basin and Wind/Bonnet Plume Basins have been attributed to wintering porcupine caribou. In April, 1980, a radio collaring program was initiated. Radio tracking on the porcupine herd calving grounds in June failed to relocate any of nine radio collared animals, indicating that they all remained south. A few porcupine caribou did utilize the Richardson Mountain migration route, crossing the Dempster Highway in the Rock River — Cornwall Creek area. Anticipating this movement, time was spent attempting to locate the wintering area of this group. It is possible that animals may have wintered in the Peel Plateau.

Biology: Zoology, polar bear, eastern Lancaster Sound and Baffin Island

Investigator: R.E. Schweinsburg, NWT Wildlife Service

Eighty-one polar bears (40 females, 41 males) were captured, marked and released. Polar bear distribution studies reveal that most bears congregate in the mouths of major inlets and

bays. Forty per cent occurred on flat landfast ice, 46 per cent on rough landfast ice and 14 per cent on the floe edge or floe ice. General physical conditions of captured bears ranged from obese to starving. Two bears, a sub-adult and cub of the year, were found in the final stages of starvation. Using a subjective fat index of 1 to 5 (1 being thin), Devon Island had a greater number of thin bears. Sixty-four per cent of the bears captured along the Devon coasts had a fat index of 2 or less compared to 54 per cent from the North Baffin area. The reason for this is not clear. The bear population in Lancaster Sound is estimated to be between 700 and 1000 animals. In late August and early September, 1980, in the vicinity of Clyde River, Baffin Island, a total of 34 bears were observed during the study. Poor tagging conditions and unexpected problems with the immobilizing drug caused cancellation of the project after only four days.

Biology: Zoology, reindeer, Tuk Peninsula
Investigator: R.A. Sims, University of British Columbia

In April, 1980, a remote sensing study range condition in the Mackenzie Delta Reindeer Grazing Reserve was initiated. In recent years, the reindeer herd owners restricted the animals' movement to the northern portion of the reserve, generally north of the Eskimo Lakes and Liverpool Bay. Nonetheless, the reindeer have flourished and in early summer 1980 the herd exceeded 15 000, its largest size in 45 years at the Delta. Baseline field data was gathered against which short- and long term changes in rangeland condition may be evaluated.

Biology: Zoology, ringed seal, Barrow Strait, Amundsen Gulf
 beluga whale, Cunningham Inlet, Somerset Island

Investigator: T.G. Smith, Fisheries and Oceans

The establishment of underwater territories by male ringed seals was observed during the early part of the winter. Birth habitat searches with a trained dog and underwater acoustic monitoring were done in several waterways of the Archipelago. From mid-July to mid-August a detailed behaviour study of beluga whales was begun at Cunningham Inlet. There some 1500 whales aggregate each summer providing the unique opportunity to study both surface behaviour and underwater vocalizations.

Biology: Zoology, polar bear, arctic islands

Investigator: I. Stirling, Environment Canada

Behavior observations provided data on habitat utilization, hunting efficiency, effect of harassment, man/bear conflicts, movements, and time budgets. Research also continued on the ecological inter-relationships of polar bears in the high arctic. An aerial survey of seals hauled out on the ice in polynya and non-polynya areas was conducted in June-July. In addition to recording numbers and locations of all seals, notes were made on ice and weather conditions.

Biology: *Zoology, Peary caribou, western arctic islands muskoxen, Bailey Point*

Investigator: *D.C. Thomas, Environment Canada*

The survey of the traditional wintering areas of Peary caribou on Bathurst, Melville and Prince Patrick Islands provided no evidence that the population had begun to recover from die-off of 1973-74 and the extremely low productivity of 1970-77. Only 10 adults were counted. The 1980 population of adult Peary caribou on the western Queen Elizabeth Islands was estimated at 634 of which 549 occur on Melville, Eglinton and Prince Patrick Islands. The assumption is that only 10 caribou remain to-day for every 42 in 1974, 83 in 1973, and 384 in 1961. There were 368 muskoxen, excluding young calves on the peninsula. That number is lower than the average count of 474 in the seven previous winter surveys.

Biology: *Joint Services Expedition, Ellesmere Island*

Investigator: *S.R. Williams, British Royal Navy*

The three months duration of the expedition enabled projects to be run through the entire arctic summer. The expedition was more successful than hoped. The immediate area around the base camp at Princess Marie Bay was fertile and rich in wildlife. All projects were successful. The study of the nesting habits of the little-known Baird's sandpiper and the discovery of a breeding colony of the rare ivory gull was of particular interest. Studies in ornithology, entomology, botany, geology, meteorology and biological oceanography were undertaken.

Biology: *Fish population, eastern arctic islands*

Investigator: *B. Stewart, Fisheries and Oceans*

Freshwater fish, zooplankton, and water chemistry samples were collected during July and August, 1980, from lakes on Devon, Cornwallis, Somerset, and Baffin Islands. Arctic char and ninespine stickleback were the only fish species caught. Data on char growth rates, diet, parasitism, reproduction, distribution and abundance are currently being tabulated. Zooplankton species are being identified and their abundance calculated. Water samples will be analysed also. These data will be disclosed through A.L.U.R. environmental reports.

Biology: *Heavy metals, Nanisivik/Arvik, NWT*

Investigator: *D. Stone, Indian Affairs and Northern Development*

Divers recovered seaweed and clam samples to determine the level of heavy metals released from the mine and tailing sites. Analysis has not been completed to date.

Biology: *Mammal and bird distributions, eastern arctic*

Investigator: *R. Decker, Government of the Northwest Territories*

During the summer of 1980, aerial surveys of wildlife were carried out in some areas of the eastern arctic as part of the NWT Wildlife Service's information gathering for use in the 1980-81 Land Use Information Series Maps.

Throughout the course of the surveys, a wide variety of important arctic wildlife species were observed.

Biology: *Water chemistry, Little Cornwallis Island*

Investigator: *M. Dickman, Brock University*

The project goal was to determine whether the chemocline bacteria in Garrow Lake were in any way unique and, if so, to estimate the impact of the proposed Cominco Mine tailings discharge into this lake. The chemocline bacteria were located

at a depth of 20 m on August 26 and 27. Population density was much lower than for any other meromictic lake previously surveyed, probably due to low light levels at that depth and a short growing season. Zooplankton and Phytoplankton were also collected. Several four-horned sculpin, a curious vertebrate, were observed.

Botany: *Plants, Komakuk Beach, Yukon Territory*

Investigator: *W.J. Cody, Agriculture Canada*

A total of 938 vascular plants were collected. These specimens will be preserved in the vascular plant herbarium of Agriculture Canada and duplicates deposited in herbaria, both in North America and Northern Europe, where they will be available for scientific study. The material collected will be used in the preparation of an illustrated flora of Yukon.

Botany: *Plants, Herschel Island, British Mountains, Yukon*

Investigator: *P.F. Cooper, Jr., Energy, Mines and Resources Canada*

About 300 plants were collected over a variety of geological bedrock. Some distinctive, and in some cases, rare varieties were found on Herschel Island and in the British Mountains.

Botany: *Acidification, Smoking Hills*

Investigator: *T.C. Hutchinson, University of Toronto*

The acidic deposition has caused substantial leaching of bases (calcium, magnesium) from adjacent tundra soils. Accumulations of sulphur and arsenic now occur in surface soils. The herb *Artemisia tilesii* has exceptional ability to neutralize acid rain drops falling on its foliage. The flora community in the acid ponds is almost entirely benthic.

Botany: *Drilling fluid toxicity, Yukon and Tuk Peninsula*

Investigator: *D.W. Smith, University of Guelph*

Two abandoned drill sites have been monitored in each territory to develop management guidelines to minimize the immediate effects of drilling waste disposal and to enhance the recovery rate of the affected terrain and vegetation. Vegetation and soils were sampled in areas affected by drilling fluid spillage. Laboratory processing of these samples was started to determine toxicological characteristics of the drilling fluids.

Botany: *Lowland ecosystem, Alexandra Fiord*

Investigators: *J. Svoboda and W. Freedman, University of Toronto*

The Alexandra Fiord Lowland Ecosystem study was begun in 1979 in an area which is an exceptional example of a lowland oasis in the arctic desert. Over the next three years studies will be undertaken in meso- and microclimate, soils, composition, distribution and production of plant communities and the autecology of certain plant series.

Botany: Oil spills, Norman Wells, Tuktoyaktuk

Investigator: T.C. Hutchinson, University of Toronto

The effects of summer and winter oil spills in 1972-1974 at Norman Wells and TUK on survival, vigour and reproductive ability of plants have been studied. Summer spills are more damaging than winter and have not allowed full restoration of plant cover. Mosses and lichens show poor recovery. No seedlings have appeared yet. Diesel oil has a longer and more severe effect than crude oil. Increased thaw of the active layer is now becoming evident. Arctic willow and dwarf birch show a great ability to recover from spill damage.

Botany: Oil spill bio-degradation, Cameron and Devon Islands

Investigator: P. Widden, Concordia University

Samples were collected on two occasions from the Bent Horn Region on Cameron Island and from Truelove Lowland, Devon Island from 1978 oil spill and control plots. Vegetation was observed for signs of recovery. These samples were extracted in the field laboratory with ether for future hydrocarbon analysis. The results of analyses indicated that there have been some marked changes in these soils since 1979. In 1980 the mesic site on Devon Island showed good recovery of willow and there was some indication of recovery of *Saxilraga oppositifolia* on the dry, raised beach site. At the Bent Horn sites there was no sign of recovery of any species on the dry and intermediate sites but at the wet site new green tips could be detected within the mat of dead moss.

Geology: Bedrock, Nahanni area, Yukon and NWT

Investigator: S.P. Gordey, Energy, Mines and Resources Canada

Bedrock, surficial, paleontological, geochemical and economic geology projects were coordinated under a single program in the Nahanni area of the Yukon and Northwest Territories.

Geology: Bedrock, northern Ellesmere Island

Investigator: H. Trettin, Energy, Mines and Resources Canada

The most important results may be summarized as follows: A replacement deposit of tennantite was found in Upper Ordovician dolostone in the McClinton Inlet area; a granitic pluton was found in a major fault zone in the northern part of Clements Markham Inlet; a mafic pluton was found in a mostly glacier-covered part of northern Yelverton Inlet; a new stratigraphic unit of Late Ordovician or younger age was recognized in the vicinity of Disraeli Glacier; and in northern Ellesmere Island there are large terrains underlain by variably-metamorphosed unfossiliferous strata of uncertain age.

Geology: Bedrock weathering, southeastern Ellesmere and eastern Devon Island

Investigator: S.H. Watts, Sir Sanford Fleming College

Under arid arctic conditions rates of physical weathering of outcrop surfaces are largely influenced by mineral composition and texture. Hydration and salt crystallization are recognized as major processes in outcrop deterioration. The upland features studied may reflect long term preservation with phases of intense weathering separated by long periods of dormancy beneath a protective ice cap.

Geology: Coastal, Queen Elizabeth Islands

Investigator: R.B. Taylor, Energy, Mines and Resources Canada

The coastal work in 1980 was part of an ongoing program begun in 1976 to obtain coastal geology information in the Sverdrup Basin in support of Transport Canada marine terminal planning. Nearly continuous oblique aerial photo coverage was obtained along the shores of Grinnell Peninsula, Devon and Bathurst Islands. Within the study area, seven main coastal types are defined.

Geology: Geomorphology, Tuktoyaktuk Peninsula

Investigator: J.R. Mackay, University of British Columbia

Continued field studies at the drained lake site northwest of Tuktoyaktuk showed that there was ice-bonded permafrost to a depth of 15 m and beneath that water under artesian pressure at a temperature of -0.15°C . The freezing point depression was due primarily to the salinity resulting from solutes rejected during permafrost growth. This demonstrates that geophysical and temperature mapping of permafrost would yield different results. Since similar conditions are known to exist beneath many other areas in the Tuktoyaktuk Peninsula region, the observation has some applied interest. A successful experiment was carried out at Garry Island in the measurement of frost heave in frozen ground during the summer thaw period. The results confirmed a long term study of post-heave at Inuvik.

Geology: Paleobotany, eastern Yukon, Tuk Peninsula

Investigator: J.C. Ritchie, University of Toronto

A program of piston coring of lake sediments in the Inuvik area, on the Tuktoyaktuk Peninsula and in the northeast Yukon was successfully completed. Pollen stratigraphic analyses of three of these sections has shown that they provide an excellent record of the Late Pleistocene and Holocene vegetation and climate of the sites.

A summer survey successfully analysed the modern vegetation of sites sampled in winter for sediment cores, discovered several *in situ* fossil stumps of spruce beyond modern treeline, and recovered sediment cores from several lakes for subsequent pollen analysis.

Geology: Paleontology, Ellesmere and Bathurst Islands

Investigator: B. Jones, University of Alberta

A study of the Devonian Bird Fiord and Weatherall Formations was begun at four locations on Bathurst Island by sampling each section for lithological and paleontological material. Brachiopods were also investigated from the Douro Formation of southwestern Ellesmere Island.

Geology: Paleontology and paleomagnetism, Eureka Sound Formation, Ellesmere Island

Investigator: R.M. West, Milwaukee Public Museum

The 1980 field work provided a great volume of new data on the paleomagnetic properties of rocks of the Eureka Sound Formation and will allow the Eureka Sound to be placed in a worldwide geochronologic context. Laboratory work, to measure the paleomagnetism of the 169 rock samples collected and of the 50 samples collected in previous years, is currently in progress at the University of Wisconsin. The detailed geological map of the Eureka Sound Formation in the Strathcona Fiord area is now nearing completion.

Geology: Permafrost, Tuktoyaktuk, Mackenzie Delta**Investigator:** S. Kinoshita, *Hokkaido University, Japan*

The main attention of the expedition was directed to the behaviour of water in the active layer and the natural environment for a joint study from the geophysical, geographical and ecological (flora and fauna) viewpoint. Field studies were conducted on pingos, exposed massive ground ice bodies and polygons which showed characteristic land features of the tundra. Geotechnical, botanical and biological investigations will be conducted on various samples taken and preserved in the field. Certain winter data will also be collected in a continuing program.

Geology: Precambrian, Devon Island and northwestern Greenland**Investigator:** T. Frisch, *Energy, Mines and Resources Canada*

The reconnaissance mapping of the Precambrian Shield in eastern Devon Island was almost completed. Paleozoic strata were confirmed on Philpotts Island previously thought to have been entirely Precambrian. Six weeks were spent in Greenland participating in mapping of the Thule region. This work continued cooperative studies by the Geological Survey of Canada and Greenland. The crystalline basement terrain of southern Inglefield Land was examined and remarkable similarities between these rocks and those of comparable latitude in eastern Ellesmere Island were found. The case, based on surface geology, against large displacement of Greenland relative to Canada along Nares Strait thus gains further support.

Geology: Quaternary, northern Ellesmere Island**Investigator:** J. England, *University of Alberta*

Investigations on the late Quaternary history and glacio-isostatic adjustments on northern Ellesmere Island were continued. Marine deposits and shell collections were obtained. Collectively these data should help clarify the pattern of regional postglacial emergence and the nature of high latitude glaciations.

Geology: Quaternary and geochronology, east central Ellesmere Island**Investigator:** W. Blake, Jr., *Energy, Mines and Resources Canada*

Several new locations were sampled and cored from frozen ponds and lakes. Analysis of cores with regard to age, pollen stratigraphy, diatoms, and moss flora continues. So far, the oldest ages obtained from Pim Island and inner Baird Inlet are approximately 9000 years.

Geology: Rock heave, Somerset and Melville Islands**Investigator:** L. Dyke, *Energy, Mines and Resources Canada*

Movements of bedrock due to forces generated by the growth of ice produce a variety of geomorphic features. A second re-survey of eight sites for detailed study of bedrock movements has been completed.

Geology: Sedimentation, northern Baffin Island**Investigator:** K. Kranck, *Fisheries and Oceans*

Sampling of glacial lakes was carried out to determine particulate inorganic matter size and concentration as well as total particulate mass. The suspended sediment in the lacustrine samples confirmed expectations and classical theory by occurring as unflocculated single mineral grains. The resulting milkiness and high suspended sediment concentrations persisted through the whole drainage course and only cleared

when fresh water was mixed with sea water. The particle spectra consist of a mixture of sharp peaks with approximately normal distributions formed by phytoplankton cells and straight line portions forming a limited number of slopes, probably due to detrital particles undergoing different flocculation processes.

Geology: Stratigraphy, Axel Heiberg and Ellesmere Islands**Investigator:** A. Embry, *Energy, Mines and Resources Canada*

Stratigraphic studies on Bjorne and Raanes Peninsulas of southwestern Ellesmere Island and near the head of Wolf Fiord on southwestern Axel Heiberg Island have clarified the Mesozoic succession in the area and have aided in interpretation of two nearby wells. The Mesozoic and Paleozoic stratigraphic mapping of southern Ellesmere will be completed in 1981.

Geology: Stratigraphy and sedimentology, Eureka Sound Formation, Axel Heiberg and Ellesmere Islands**Investigator:** A.D. Miall, *University of Toronto*

Complete sections were obtained at Strand Fiord, Expedition Fiord, Mokka Fiord, Remus Creek and Vesle Fiord. Preliminary results indicate that most of the rocks are fluvial and deltaic in origin consisting of sandstone, siltstone and mudstone, most of which have been recycled from marginal and intrabasinal uplifts exposing late Paleozoic and Mesozoic sedimentary rocks. It is hoped to produce a detailed zonation of the formation using palynomorphs. The refined stratigraphic control should permit better intrabasin correlation and a more satisfactory correlation between stratigraphic and plate tectonic events.

Geology: Surficial geology, Dundas Peninsula**Investigator:** D.A. Hodgson, *Energy, Mines and Resources Canada*

The surficial materials and Quaternary history of south-central Melville Island were investigated. Mid and late Quaternary glaciations and marine transgressions were recorded in deposits adjacent to Viscount Melville Sound and Liddon Gulf. The stratigraphic relationships of deposits are poorly exposed and the chronology constructed is speculative.

Geophysics: Geothermal, arctic islands**Investigator:** A. Judge, *Energy, Mines and Resources Canada*

Temperature logs were run in 25 boreholes. Six of these holes were officially abandoned this season. Observations continued at the shallow temperature observation sites in the modern Mackenzie Delta and at the Illisarvik drained lake site on Richards Island. At the lake site, drained in 1978, freeze-back of the previously unfrozen lake bottom has proceeded to a depth of 4 m. A successful fall cruise on the Coast Guard ship Nahadik enabled a broad program of thermal gradiometer observations on the Beaufort Sea Shelf. Some 40 stations were occupied. During station work in the vicinity of the "Admiral's Finger", one frozen core was recovered and a piece of bubbly ice with sea-bottom mud on one face freed from the sea bottom.

Geophysics: Network measurements, arctic islands

Investigator: P.J. Winter, Energy, Mines and Resources Canada
Gravity ties were established between certain key stations in the arctic from Inuvik to Grise Fiord in preparation for completion of the Adjustment of the Canadian Gravity Standardization Net 1980.

Geophysics: Paleomagnetism, Cornwallis Island

Investigator: P.L. Lapointe, Energy, Mines and Resources Canada

About 250 sun compass oriented samples were drilled from the Snowblind Bay Formation. The specimens, mostly taken from red sandstone and siltstone, were subjected to different demagnetization techniques — thermal and alternating field demagnetization. The results reveal magnetization of low inclination for the rocks from the upper section of the formation, indicating that these sediments were magnetized in equatorial areas. A second magnetization of high inclination, present in the lower section, is probably caused by phenomena related to orogenic activities of a younger age. Because no evidence of high inclination magnetization was found in rocks sampled previously, from Somerset and Prince of Wales these areas were probably not affected.

Geophysics: Borehole, permafrost, Mackenzie Delta

Investigator: P.B. Fransham, University of Waterloo

Sample cores were taken from the drained Lake Illisarvik for ultrasonic testing and isotope evaluation. Bulk density and compressional wave velocities were determined in the field. The potential use of calibrated borehole geophysical techniques to identify ground ice was also investigated. Preliminary indications are that the gamma-gamma log is a good indicator of ground ice and there is a strong correlation between the gamma-gamma log and the volumetric percentage of ice. Gamma and neutron logs are not as good indicators of ground ice.

Geophysics: Permafrost, Richards Island

Investigator: P. Fritz, University of Waterloo

A number of continuous cores have been collected from locations in and adjacent to the drained lake basin at Illisarvik to examine the presence of isotope variations in ice contained within permafrost. Interpretation of the results obtained to date suggests that waters from an earlier phase of Lake Illisarvik have been preserved in some of the sediments beyond the latest shoreline. Within the lake bed, the freezing front has advanced differentially through the various types of sediment present.

Glaciology: Glacier physics, Queen Elizabeth Islands

Investigator: R.M. Koerner, Energy, Mines and Resources Canada

Studies to detect increasing acidity levels in the snow over the past 30 years were made at the top of the Agassiz ice cap. The mass change along two profiles from the top of the Agassiz ice cap to sea level was measured as well as the mass balance of the north side of the Devon Island ice cap. Inclement weather prevented remeasuring Meighen and Melville Island ice cap balances. Laboratory investigations were conducted based on seasonal cycles of microparticle, ion and potassium concentrations.

Hydrography: M'Clintock Channel

Investigator: P.V. Davies, Fisheries and Oceans

The first year of a two-year project in M'Clintock Channel was operational for a period of 67 days. During this period 11 383 spot soundings were obtained, providing coverage in a virtually uncharted area.

Hydrography: Simpson Strait

Investigator: S.B. MacPhee, Fisheries and Oceans

This project was the preliminary part of an Aerial Hydrography Project and involved recovering and targeting horizontal control stations.

Hydrography: Tides, M'Clintock Channel

Investigator: B.J. Tait, Fisheries and Oceans

During the 1980 field season the Tides, Currents and Water Levels Section of the Canadian Hydrographic Service, Central Region, collected tidal data at six locations in M'Clintock Channel and at one site in Wellington Channel. Preliminary inspection of the data indicates a southward progression of the tidal signal in M'Clintock Channel.

Hydrology: Mackenzie Delta Region

Investigator: John C. Anderson, Environment Canada

A study of culvert icings was conducted in the taiga zone in March and May, 1980. Additional work performed included: snow surveys and related observations on snow cover, installation of precipitation gauges and thermographs, and installation of water level recorders.

Hydrology: Cornwallis and Devon Islands

Investigator: M. Woo, McMaster University

Three studies were continued in small basins in the high arctic. The annual maximum lake ice thickness decreases as snow depth increases. High arctic rivers follow a continuum from arctic nival to proglacial as far as regime is concerned. Overland flow of water is highly spatially variable and is strongly favoured by a high groundwater table in the active layer.

National Parks Survey: Northern Ellesmere Island

Investigator: J. England, University of Alberta

Northern Ellesmere Island is one of several areas in Natural Region 39 designated for a natural resource inventory. The inventory evaluates the region's significance and potential as a possible National Park. A wide variety of sites were sampled across Hazen Plateau. The terrain immediately north of Hazen Camp is clearly the most diverse and productive observed in the general area and it essentially represents a thermal oasis that contrasts sharply with the remainder of the plateau.

*Oceanography: Heat budget, Dundas Island polynya**Investigator: S.D. Smith, Fisheries and Oceans*

The heat budget of the Dundas Island polynya was studied. A sonic anemometer-thermometer was used to measure turbulent heat flux in the air surface layer. The data set consists of 25 runs over the polynya and three runs over the surrounding ice surface.

*Oceanography: Oil spill, Cape Hatt, Baffin Island**Investigator: D. Thornton, Environment Canada*

The four-year Baffin Island Oil Spill (BIOS) Project study began in the spring, 1980. The objectives are to determine if the use of dispersants in the arctic nearshore will reduce or increase the environmental effects of spilled oil, and to assess the relative effectiveness and environmental impact of the other shoreline protection and cleanup techniques. During 1980, baseline physical, chemical and biological data were collected. In August, eight small oil discharges were made in conjunction with the shoreline countermeasure program.

*Oceanography: Physical, Beaufort Sea, Dundas Island polynya and Bridport Inlet**Investigators: D.R. Topham and R.A. Lake, Fisheries and Oceans*

In the Dundas Island polynya, measurements were made over open water of mean velocity and temperature profiles in the atmosphere upstream and downstream of the polynya, together with records of the fluctuating components of velocity and temperature. Preliminary analysis indicates that sufficient data have been obtained to assess heat loss from the polynya over a wide range of conditions and by independent methods. Studies of the Beaufort Sea oceanography have involved analyses of all the CTD profiles acquired in November, 1979, and the planning of a new field operations scheduled in March, 1981.

An oceanographic survey was carried out in Bridport Inlet to provide sufficient data to test a model of the circulation within the Inlet, the proposed site of an LNG tanker terminal.

*Recreation Policy: Tuktoyaktuk, NWT**Investigator: V. Paraschak, University of Alberta*

Field work was carried out in Tuktoyaktuk as part of a larger study examining the congruence between policies for recreation prepared at a federal or territorial level and the actual recreation programs existing in specific NWT communities. A high level of incongruence was discovered in all communities. An analysis is currently being carried out which pinpoints causes for this incongruence, and identifies avenues for improvement in the policy making process.

PCSP support was also provided for:

- a natural resource survey of northeastern Axel Heiberg to evaluate the area as a National Park;
- mechanical strain measurements in sea ice;
- permafrost and coastal studies, southern Banks Island;
- a study of mineral occurrences on Victoria Island;
- measurements of stratigraphic sections of the Snowblind Bay Formation and member C of the Read Bay Formation;
- a study of late Ordovician — early Silurian conodonts and graptolites on northwestern Cornwallis Island;
- a study of the Blue Fiord and Stuart Bay Formations of Ellesmere and Bathurst Islands;

- a collection of a reference suite of minerals and rock types near Lake Harbour;
- a biophysical survey of the Involut Hill near Tuktoyaktuk;
- a test of X-band radar for ice detection from Bylot Island;
- a test of Acufix navigation equipment in the Beaufort Sea;
- a navigation system (Decca) for hydrographic and geophysical studies from Pandora II in Beaufort Sea;
- stream runoff studies on Cornwallis Island;
- population ecology studies of several arctic grasses;
- a study of population and migration of the lesser snow goose;
- the establishment of geodetic base stations;
- population studies of Perry caribou;
- the study of the effect of the white man's explorations on the Coppermine Eskimo;
- the climatology of the northwater;
- the mass balance studies of White and Baby Glaciers on Axel Heiberg; and
- tidal measurements in M'Clintock Channel.

Plans for 1981-82

The 1981 arctic field season will see more than 150 scientific parties conducting their individual and characteristic investigations.■

Department
of the
Environment

DOE



Nahanni National Park. Photo: Parks Canada.

Environmental Protection Service

Responsibilities

EPS ensures enforcement of the federal government's regulations concerning environmental protection. It is concerned with air and water pollution control, solid waste management, environmental contaminants, environmental impact assessment and control and environmental emergencies. This service is the department's contact with industry and provincial environmental protection agencies. In the North, the service operates through district offices in Whitehorse and Yellowknife.

Air Pollution Control

Responsibilities

This group, under the terms of the Clean Air Act, monitors and controls air pollution in the two territories.

Review 1980-81

The carbon monoxide monitoring in the Yellowknife, NWT, downtown core area continued until December, 1980. The monitoring was curtailed when it was determined that the ambient CO levels remained in the desirable range with infrequent peaks into the acceptable range. One NAPS and two Hi-Vol stations operated continuously. The 13 dustfall sampling stations for arsenic operated according to the CPHA task force recommendations. As part of a cooperative engineering work term project, an analysis was written with emphasis on data from 1978 to present. The report indicated that ambient arsenic levels had lowered to background concentrations.

EPS and Esso Resources Limited entered a joint agreement to monitor ambient air quality in Norman Wells.

A technical review was conducted on the As_2O_3 crystallization plant at Giant Yellowknife Mine. The arsenic is being shipped on a regular basis to the USA for use in the wood preservative industry. Con Mine is planning to do the same thing.

As inspectors under the Clean Air Act, EPS carried out routine gasoline sampling of leaded and lead-free products in Yellowknife and Hay River. Enforcement actions were carried out at three retail outlets in Yellowknife.

In Yukon, analysis for CO and NO_x continued on a seasonal basis. The CO levels continued to exceed national acceptable limits in winter. The NAPS station continued to operate in Whitehorse.

Monitoring of unleaded gas for compliance with the Lead Free Gasoline Regulations continued. In general, a noticeable improvement occurred.

A preliminary study was conducted in Whitehorse of the effects on ambient air quality of the emissions of wood burning stoves.

EPS provided technical assistance to the Indian and Northern Health Services of National Health and Welfare on air quality problems in local ice arenas.

Plans for 1981-82

A vehicle emissions testing program will be conducted in Whitehorse this summer on a model developed by APCD. It relates engine tuning performance to reductions of various pollutants in the air.

The NAPS, Hi-Vol and arsenic dustfall sampling will continue. A fugitive emissions survey will be conducted at Con Mine in Yellowknife of the arsenic storage ponds. This will be done in cooperation with Cominco and in liaison with the NWT Water Board and the City of Yellowknife as a school is being built in the vicinity.

Assessments of air emissions and controls of new mines in the NWT will be carried out. Guidelines will be developed for the control of emissions associated with the proposed Norman Wells IPL pipeline. It is intended to develop and negotiate emission standards for the proposed acid plant at the Cominco Mine at Pine Point, and to participate in a stack emission monitoring program at Giant Yellowknife Mine.

Water Pollution Control

Responsibilities

Water Pollution Control, with the Department of Indian Affairs and Northern Development and the two territorial water boards, ensures development and implementation of adequate water pollution control programs in the North. This is particularly so in relation to the mining and petroleum industries. The group implements the provisions of the Ocean Dumping Control Act and other water pollution abatement programs. It stimulates the development and application of water pollution control techniques as they relate to the North.

Review 1980-81

The northern technology program continued its expertise in environmental engineering in the Canadian North. It assisted operating departments and resource industries to overcome problems with utilities delivery and wastewater treatment.

In Yukon, projects involved "water bleeder" studies at the University of Alberta for the City of Yellowknife and field supervision of buried water and sewer main studies at Dawson City for the National Research Council. Direct assistance was provided in the preparation of reports on sanitation model studies and water conservation issued by the Northwest Territories.

During 1980-81 three publications were released by the Water Pollution Control Directorate. They were: Water Conservation Alternatives for the North; Utilities Delivery in the Northern Region, Proceedings of Symposium held March 19, 20 and 21, 1979; and Exploration Camp Wastewater Characterization and Treatment.

The chairman and secretariat were provided to the Regional Ocean Dumping Advisory Committee and inspectors monitor ocean dumping activities. Six permits were issued in 1980-81 under the Ocean Dumping Control Act. Included were three for dredging at Tuktoyaktuk, McKinley Bay and Churchill harbors; two for spreading coal dust in the harbors at McKinley Bay and Tuktoyaktuk to accelerate ice melt; and one

for an oil spill experiment at Cape Hatt, Baffin. A contract to study benthic populations in Tuktoyaktuk Harbour was administered by EPS. One prosecution under the Ocean Dumping Control Act was launched.

Sediment samples were taken of potential receiving waters downstream of Ptarmigan Mine. This sampling included one unnamed lake, Prosperous Lake and the Yellowknife River below Prosperous Lake in the NWT.

Can Tung Mine investigation was carried out under the Metal Mining Liquid Effluent Regulations of the Fisheries Act. The investigation was terminated following a decision by the Regional Department of Justice to proceed with charges under the NIWA.

A survey was carried out at Camlaren Mine on Gordon Lake to provide a basis for monitoring the ongoing gold mining and milling operations. Results are being analyzed.

In response to reports of tainted fish in Hay River, EPS investigated all fuel handling facilities in Hay River Harbour and collected sediment samples for analysis.

Technical committee meetings were attended to provide support to the NWT Water Board issuing of water licences to industrial and municipal users. The final draft of *Guidelines for Municipal Type Wastewater Discharges in the NWT* was completed and is being considered by the Water Board for implementation.

EPS assisted the NWT to monitor municipal wastewater outfalls on the Slave River at Port Smith.

Wastewater compliance studies were conducted at Cyprus Anvil Mine and United Keno Hill Mine. Water chemistry and biological surveys were continued along the Yukon River, from Whitehorse to Lake Laberge, and March Lake.

EPS Yukon continued evaluation studies of the Whitehorse sewage lagoon.

EPS Yukon presented briefs before Yukon Territorial Water Board public hearings for the Venus Mine water use licence application and the Cyprus Anvil Mine Down Valley Tailings Disposal Project.

Predevelopment environmental assessment studies were conducted at Venus Mine and Placer Development's Howard's Pass property.

The under-ice study of natural oxygen depletion in creeks and streams in the Whitehorse area was completed.

EPS Yukon provided technical assistance to a multi-disciplinary interdepartmental study team assessing the impact of placer mining on the environment.

Plans for 1981-82

Technical support will continue to the territorial governments with emphasis on appropriate wastewater technologies. Advisory and contract management services regarding water pollution control and sanitation for work camps and permanent facilities will be offered to the operating departments in the North. Further support will be given to the department's role in the North by providing environmental engineering solutions to problems arising from northern extraction and development activities.

Guidelines for sampling methods for ODCA requirements will be established. RODAC will continue to be chaired and administered by the EPS office. Inspections of dump sites will be done to ensure compliance with permit conditions.



Dawson City and Yukon River from Midnight Dome. Klondike National Historic Sites. Photo: Parks Canada.

A study of sediment and benthic invertebrates will be made in Yellowknife Bay and Baker Creek.

Five new mines in the NWT will be surveyed to provide a basis for more effective assessments of future environmental impacts and appropriate control measures.

Site specific controls for compliance with the Fisheries Act and for support to the NWT Water Board will also be continued. This will include implementation of the municipal wastewater guidelines and participation in a working group on mine tailings disposal.

Six reports of previous water pollution studies will be completed. A quarterly Water Pollution Control Operator Newsletter will be produced.

Predevelopment assessment surveys will be conducted at proposed mine sites.

EPS Yukon will coordinate the departmental review of the Cyprus Anvil Down Valley tailings disposal project abandonment plan.

EPS Yukon will continue to provide technical assistance and support to the Territorial Water Board.

A survey will be conducted at the City of Whitehorse Landfill for leachate generation and migration.

A study will be conducted of the environmental impacts associated with mineral exploration and mine abandonment in Yukon.

The service will play a role in the Yukon River Basin Planning Program.

A position on placer mining will be developed and advice provided to DIAND.

Federal Activities

Responsibilities

The Environmental Protection Service ensures that sources of pollution at federal facilities are cleaned up and that new projects are environmentally acceptable. Pollution problems are identified and assessed and cleanups developed in consultation with other federal departments. The annual cleanup program continues to record and evaluate pollution problems generated by federal departments. Environmental effects of new projects are assessed through a screening process.

In addition to alleviating pollution at federal facilities, the Federal Activities Assessment program (FAA) provides liaison on environmental protection pertaining to activities of other government agencies and crown corporations. Assistance is provided through guidelines, codes of good practice and specific advice. The FAA program undertakes and coordinates interdisciplinary environmental reviews of federal activities to develop advice, assistance and recommendations for appropriate courses of action for governments, senior management and industry. The program also implements the EPS role and responsibilities in accordance with the departmental policy statement "DOE Role in EARP".

Review 1980-81

EPS headquarters coordinated DOE regional and national meetings on environmental concerns related to offshore oil and gas drilling and production. Proceedings of those meetings were prepared and distributed.

EPS headquarters also prepared and published an annotated bibliography on Onshore Impacts of Offshore Hydrocarbon Development. The document will aid in preparation of briefs to the Beaufort Sea Environmental Assessment and Review Panel.

Workshops were held in Whitehorse and Yellowknife to discuss environmental issues associated with resource roads development in the North.

EPS headquarters initiated a reporting mechanism for the Senior ADM on activities in coastal waters.

Although EPS Atlantic has no direct function north of 60°, it is concerned with activities in Davis Strait, Baffin Bay, the Labrador Sea and onshore in Labrador.

During the past year a number of sites were inspected and inventories were made of quantities of hazardous materials. Particular attention was paid to PCBs.

EPS Atlantic coordinated the DOE technical review of the Gull Islands Hydro Electric Project and participated in public meetings on the project.

The southern portion of the transportation route for the Arctic Pilot Project and terminal discharge facilities were reviewed.

EPS Newfoundland and EPS Quebec worked with officials from both provinces to study efforts to reduce the "red water" problem at iron mines in western Labrador and northern Quebec.

EPS Yellowknife examined the sewage disposal system at the Yellowknife airport and recommended improvements. Discussions were held with MOT regarding sewage disposal for the proposed airport expansion.

EPS western and northern continued to participate in DIAND's Arctic Waters Advisory and Land Use Committees. Initial environmental evaluations (IEE) of several new mine sites were carried out for Environmental Assessment and Review Process (EARP).

Under the Arctic Waters Pollution Prevention Act (AWPPA), EPS pollution prevention officers, assisted by DIAND, inspected drilling operations in the Beaufort Sea.

EPS western and northern participated in the EARP hearings for the Arctic Pilot Project, and the Norman Wells oil field expansion and pipeline project.

EPS Yukon provided the Pacific and Yukon Regional Office with information on the potential for environmental impacts from hydrocarbon development in the Beaufort Sea.

Federal facilities in Yukon were inspected by EPS officials.

EPS Yukon continued to provide technical support to the Land Use Advisory Committee of DIAND.

Plans for 1981-82

EPS Headquarters will examine such development activities as the Beaufort Sea and offshore Atlantic exploration efforts to acquire, analyse, interpret and present information on the impact on the environment of these undertakings. Headquarters will also coordinate EPS/HQ reviews of IEE's and environmental impact statements (EIS) and provide technical comment to the EPS regional review team for northern projects referred to the Federal Environmental Assessment and Review office (FEARO).

Ecological impact controls for mitigating impacts of offshore oil and gas activities in the North will be developed. Similar controls will be developed for erosion control practices for linear facilities constructed in permafrost.

EPS headquarters will represent and support EPS/DOE on interdepartmental committees which deal with environmental impact and assessment.

The "Offshore Situation Report" will be maintained as an information service on activities in the Beaufort Sea, Davis Strait and Labrador Sea.

EPS Atlantic will inspect shore supply bases for offshore exploration at Cartwright, Hopedale, Saglek and Goose Bay. A study will be undertaken of PCB contamination on the Lower Churchill River. EPS observers will monitor black fly larviciding at Labrador City. Officials will inspect the status of PCB storage facilities at Goose Bay and assist provincial authorities to remove PCBs to disposal sites.

Observers from EPS Atlantic will accompany EMR inspectors to the three drilling rigs operating in the Labrador area.

A liaison function between Labrador native communities and industry will be maintained.

EPS Yellowknife will maintain a registry of federal projects in the NWT and contribute to and coordinate DOE's technical review of all new IEEs.

A joint government/industry program to determine the significance of benthic communities at dredging sites will be managed by EPS Yellowknife.

EPS Yukon plans to publish recommendations for disposing of drilling mud fluids in non-permafrost of Yukon and the NWT.

A technical review of submissions by Foothills Pipelines limited to the EARP panel for the Alaska Highway Pipeline will be undertaken by EPS Yukon.

Waste Management

Responsibilities

EPS ensures that federal government activities provide for waste disposal and conservation. New procedures and techniques for solid waste management are developed and information distributed.

Review 1980-81

A beachate survey of the land disposal sites in Yellowknife and Inuvik was conducted to determine the impact on receiving waters.

EPS Yukon represented the Territorial Government on the technical steering committee for the hazardous waste study undertaken in northern and western Canada.

EPS continued to manage the Whitehorse interim hazardous waste storage facility.

EPS inspected, documented and made recommendations for removal of chemicals left at an abandoned minesite in Yukon.

Technical review and advice were provided for the waste management systems at Old Crow. It also continued to provide technical advice to Yukon communities on solid waste management practices.

Plans for 1981-82

Locations will be identified for the disposal of used rubber tires from Cominco Limited activities at Pine Point. Sources of retrograde scrap metal in the NWT will be identified.

A document entitled "Waste Disposal Alternatives Guide for Land-Use Operations in the NWT" will be published.

EPS will assist the Government of Yukon in preparation of a policy for hazardous waste management. This will be a continuation of implementation of the recommendations in the hazardous waste management report prepared for northern and western Canada.

EPS will also continue to assist YTG design solid waste facilities.

Contaminants Control

Review 1980-81

The inventory of PCB containing equipment was continued this year. An investigation was carried out on a reported PCB spill at Con Mine. Labelling and handling information was distributed.

EPS Yukon worked with the territorial government to coordinate advice to other government departments and the public on the biting insect control program.

EPS chaired an intergovernmental advisory committee on pesticide management in Yukon.

EPS provided technical advice to the territorial government on drafting of pesticide legislation.

Inspections of in-use and stored PCB transformers and capacitors at industrial locations in Yukon were carried out as was surveillance of transport out of the territory.

Plans for 1981-82

Compliance with the PCB regulations and other regulations under the Environmental Contaminants Act will be monitored and enforced.

EPS will continue to oversee pesticide management in Yukon.

EPS plans to undertake a survey in the Klondike region to determine if residue PCB from abandoned power distribution sites for gold dredges can be detected in soils and fish tissue.

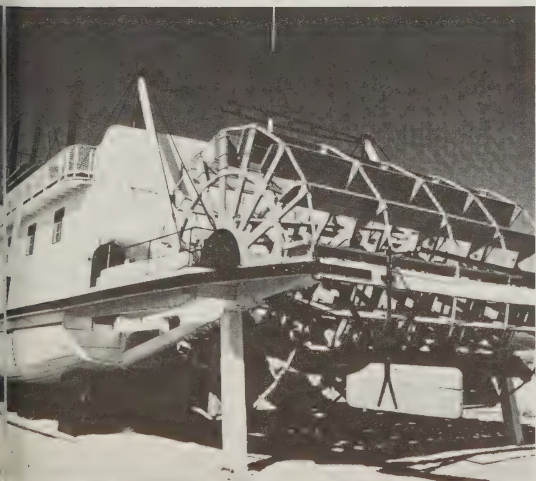
The directorate will continue to update the PCB inventory and the PCB labelling program.

Environmental Emergencies

Review 1980-81

One hundred and nineteen significant events were reported in 1980 on the spill report system. Of these, approximately 20 were followed up by EPS.

EPS distributed GNWT spill report forms to all water, road and air transport companies licensed to use or carry petroleum products, chemicals or hazardous materials in the NWT. Reporting procedures and lists of contacts for NWT spills were prepared for the regional contingency plan.



The wheel of the S.S. Klondike, Whitehorse National Historic Site. Photo: EPS Canada.

Advice was provided to various NWT facilities for fuel dyking requirements.

The Baffin Island Oil Spill Program (BIOS) at Cape Hatt, NWT, completed its first year field program.

During 1980-81 EPS Yukon filed 25 pollution incident reports, 12 of which required initial on-site investigation and six required one or more follow-up inspections.

Steps were taken to update the contingency plan to deal with oil and hazardous chemical spills in Yukon.

An inspection of the high risk areas of the White Pass and Yukon Route multiproduct pipeline was conducted. Damaged sections of the line and deficiencies in snow removal operations were identified and recommendations made to prevent future line damage.

Standard Operating Procedures for Environmental Emergencies in the NWT will be developed as an extension of the regional contingency plan.

Action plans for spill surveillance and technical advice teams will be developed as part of the Government Contingency Plan — Arctic Seas. The spill response capability of the EPS District Office in the NWT will be improved to include suitable legal sampling and safety equipment.

EPS will continue to respond to the NWT spill reporting system. Site inspections of the Hay River Harbour fuel handling facilities will be made.

Operating procedures will be formulated and expertise developed for the use of dispersants in the event of a major oil spill in arctic waters.

A survey of bulk petroleum facilities in Yukon will be conducted jointly with the Territorial Fire Marshal's office. The survey will be used to reduce spill incidents.

Contingency planning will remain a high priority with EPS, continuing to work with individual industry components.

EPS will continue its participation in AMOP and BIOS.

Atmospheric Environment Service

Responsibilities

The Atmospheric Environment Service (AES) is the federal agency which provides information, consultation and advice on past, present and future atmospheric, ice and sea-state conditions. Through its observation and communication networks and arctic forecast systems, AES receives and processes surface observations and upper air information on a year-round basis; issues forecasts at regular intervals; conducts ice reconnaissance missions and provides consultation and forecasts of ice conditions; and monitors air quality. AES participates in the federal Environmental Assessment and Review Process (EARP) pertaining to northern development and exploration, and undertakes research projects to increase knowledge of atmospheric processes, weather dynamics, ice and wind-wave systems, and of the interaction of man's activities with the atmosphere.

Plans for 1981-82

The major study of AES' communication system undertaken in 1980 is under review. Some projects will be approved for implementation in 1981-82. Construction commenced in April 1981, in Eureka on Project Hurricane. Work will continue all summer to construct a communications link between Eureka and Alert. A joint review of Arctic Aviation Weather Service requirements was carried out in 1980 by AES in cooperation with Transport Canada. Public hearings were held across the North with participation by the Northern Air Transportation Association, individual pilots and commercial air carriers. The draft report, which identified deficiencies in the availability of and access to relevant weather information, recommends solutions to the problems and implementation over the next few years. The final report will be published in 1981.

It is recognized that ice services must be increased because of the increasing resource exploration activities in the arctic. Various levels of ice services have been proposed and considered. In 1981 AES expects that approval of additional resources for ice services will expand the activities.

An evaluation assessment study of weather services in 1980 produced approval of a joint program to evaluate ice services and marine weather services. It will commence in May, 1981. In the North, this evaluation will be concerned with the services provided to marine transportation, commercial fishing, and resource exploration.

A number of specific goals for 1980-85 and program component objectives were identified. Subsequently, a team was assigned a special project of revising the AES concept for 1990. This team will present a report to management for consideration and approval in July, 1981.

AES has received approval for additional software and hardware at the Canadian Meteorological Centre (CMC) to process more data more quickly and to keep pace with the automation of other parts of the forecast production system. Plans are being developed to acquire a vector computer (a modern, high-speed special-purpose computer designed for numerical modelling) for CMC. The cooperative Canadian-Danish satellite receiving station in Sondrestrom Fjord, Greenland, is expected to begin operating in May, 1981. AES will place increasing emphasis on environmental baseline studies and the impact of ice on arctic operations. It will continue to provide information on present and future weather and ice conditions.

Administration Branch

Review 1980-81

Site inspections of the high arctic upper air stations were conducted in May, 1980, and April, 1981, and included on-site training of personnel in safety and fire protection.

Plans for 1981-82

In August and September, 1981, visits are planned to some sites where major construction and renovation projects are to be undertaken during the summer. This will help to evaluate structural modifications.

Atmospheric Research Directorate

Responsibilities

The Atmospheric Research Directorate (ARD) advances knowledge and understanding of the atmosphere and the atmosphere-land, water and biota. It seeks to increase the quality and quantity of environmental impact assessment, to provide scientific information for the development of national ambient air quality objectives, and to develop advanced forecast systems.

Review 1980-81

Because American meteorologists plan to operate a dense monitoring network during 1980 to 1985, a flask-sampling program was initiated by AES in 1980 at Mould Bay, NWT.

Daily surface-based measurements of total atmospheric ozone continued at Resolute, NWT, using a Dobson ozone spectrophotometer. Once a week, a vertical ozone profile from the earth's surface to approximately 30 km altitude was obtained by using a Science Pump-ECC electrochemical balloon sonde.

The Canadian Arctic Air Pollution Program (CAAPP) of the Air Quality and Inter-Environmental Research Branch completed its first full year of operation. The network stations at Alert, Mould Bay and Igloolik monitor aerosol samples for major ions such as sulphates and nitrates as well as for trace metals. Visible light scattering was also monitored by integrating nephelometry at Mould Bay and Igloolik. In addition, aerosol sampling was conducted on an ice reconnaissance mission in February, 1981. CAAPP is part of an international effort involving Canada, U.S.A., Norway, Denmark, and Great Britain.

Scientists in Meteorological Services Research Branch (MSRB) continued to participate in the Beaufort Sea Winter Ice Experiment. This is a joint industry-federal government research activity to develop site-specific and regional ice prediction models. Meteorological, oceanographic and ice data collected during the initial phase of the experiment have been processed and used in testing the performance of the ice prediction models developed to date. It is planned to collect more data to continue testing the models. MSRB is also evaluating the performance of available ice prediction models for unconsolidated pack ice.

A simplified version of a real-time AES oil spill trajectory model was incorporated in a system capable of operating on computing facilities in AES' regional Weather Centres. The system operates in a man-machine mix, and can provide fast response to oil spill emergencies in ice-free marine locations.

MSRB developed a procedure for automatically predicting the probability of precipitation amounts. This was implemented in AES operations at the Canadian Meteorological Centre for eight northern locations. Work continued in MSRB in the development of a satellite ice status system and digital data processing for application at Ice Forecast Central.

Plans for 1981-82

Air quality monitoring at Mould Bay, Igloolik and Alert will continue as a major CAAPP project. Short term ground monitoring studies, aircraft sampling sorties, and a program to determine aerosol size distributions in arctic haze will be attempted in the winter of 1981-82. The ozone program will continue at Resolute.

A cooperative program with industry will develop a more comprehensive real-time oil spill trajectory prediction system.



S.S. Klondike, Whitehorse National Historic Site. Photo: Parks Canada

Canadian Climate Centre

Responsibilities

The Canadian Climate Centre (CCC) undertakes climatological functions related to applications, impacts, information services, data management, monitoring, prediction, and research. The CCC provides an effective climatic service, developing the ability to understand and predict the effects of man and climate. In addition, the CCC is the lead agency for the Canadian Climate Program, a national program to coordinate climate-related activities in Canada.

Review 1980-81

Lancaster Sound — northwestern Baffin Bay continued to be an area of high interest. Work on offshore wind and wave climatologies progressed well. These are derived climatologies, based on gridded surface pressure data. Support was also provided to the preparation of the Green Paper on the best uses of the Sound in the form of working group participation, review of documents, and assessment of climate data.

Climate of the Canadian Arctic Islands and Adjacent Waters continued. Volume 1 was published, and an expanded report was prepared on the climate regions determined during the completion of Volume 2.

An analysis of arctic air temperatures with respect to their impact on ship-hull steel selection was undertaken for Transport Canada. Results suggest that the present set of geographical zones used for arctic ship regulation requires modification to more adequately reflect the air temperature regime.

A significant amount of time was devoted to the evaluation of various documents filed by industry under the Environmental Assessment and Review process (EARP).

An increasingly important concern during 1980 was the assessment of the impact of climate variation and change on the arctic and on activities there. An extensive review of the literature on arctic climate variation/change was begun.

Plans for 1981-82

The techniques developed for the offshore wind and wave climatologies of Lancaster Sound will be used to prepare similar information for other offshore areas of the North.

Volume 2 of the Climate of the Canadian Arctic Islands and Adjacent Waters will be published and the temperature study for arctic ship-hull steel selection will be finalized.

The literature review of arctic climate variation/change will be completed. An assessment of climatic change in the arctic will be made.

Work on arctic storm tracks will be continued.

The collection of non-standard arctic weather data through the Polar Continental Shelf Project will be continued. A preliminary assessment will be made of the 1972-80 accumulated data's potential for augmenting existing knowledge of the arctic summer climate.

Central Services Directorate

Responsibilities

The Central Services Directorate (CSD) through its Ice Branch provides ice information to support transport and resource exploration needs in the arctic. It also provides climatological computing services, technical and professional training, language planning, maintenance for data acquisition networks, and expertise for the development and implementation of atmospheric instruments and systems.

Review 1980-81

The ice services program provided by Ice Branch continued at approximately the same level as in earlier years. The concept of winter probes into arctic areas using Sideways Looking Airborne Radar (SLAR) was continued with a series of flights in February, 1981. A second Winter Ice Experiment in the Beaufort Sea was conducted in mid-April. The operational satellite coverage of the area remained marginal because of the delay in completion of the cooperative Canadian-Danish receiving station in Sondrestrom Fjord, Greenland. It is now expected to begin operations in May, 1981.

Only minor changes were made in the ice forecasting program. The support provided in the area by facsimile broadcast of current ice conditions was improved by relaying data from Ottawa through the ANIK satellite for broadcast to ships from Resolute and Frobisher Bay.

A research scientist focused his attention on remote sensing applications and the Radar Satellite (RADARSAT) program.

Ice climatological support continued. An Ice Atlas of Canadian Arctic Waterways was published. The analysed archive of laser data was substantially expanded by summer students.

Automatic Data Reduction Systems (ADRES) were installed at most upper air stations, and the hydrogen inflation building at Baker Lake was re-designed to enhance safety.

Training Branch conducted formal weather observing courses at training centres in Colorado Springs and Cornwall, Ontario, for staff assigned to DEWline and AES weather stations across the arctic. Results of examinations written by observer-communicator trainees for the Arctic Community Airports program were reviewed.

Plans for 1981-82

A new international symbology system for ice charts will be instituted late in 1981. Work will continue on the backlog of data for the annual publication "Ice Summary and Analysis".

Flight testing of an improved laser profilometer is expected to begin in June, 1981, with operational use to follow during the winter. The passive microwave radiometer test had to be cancelled because of a change in the instrument availability.

A detailed study of the microwave signature of ice, i.e., "ground truthing" of ice radar satellite data, at various seasons of the year, is planned in the Mould Bay area beginning October, 1981.

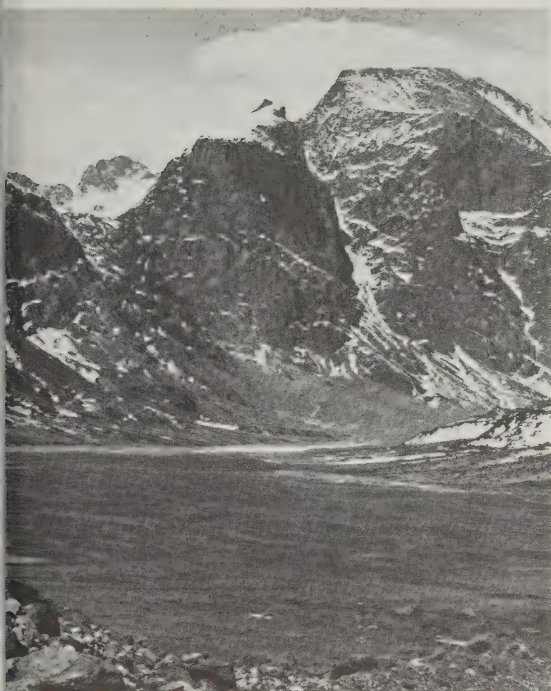
The renovation of hydrogen inflation buildings will continue and some will be converted to helium wherever transportation costs are not prohibitive. It is planned to install additional automatic weather stations to communicate data via meteorological satellites.

Training support services for all weather observing programs in the North will be provided at a level equal to 1980-81. The new meteorological instructors at Fort Smith will be given assistance as needed.

Field Services Directorate

Responsibilities

The Field Services Directorate provides up-to-date information, forecasts and warnings to most of the larger northern communities. It provides scientific consultation on the application



Water Lake and Mount Odin. Auyuittuq National Park. Photo: Parks Canada.

f meteorological and climatological information to northern problems. The directorate operates five networks for data acquisition, a rapid communications system, an Arctic Weather Centre, Canadian Meteorological Centre, a satellite readout station, contract stations and scientific support offices.

Review 1980-81

Meteorological information, forecasts and consultation services were provided for a variety of programs and activities in the North. Weather services for northern residents, aviation and other users continued to be provided from the Arctic Weather Centre in Edmonton, the Yukon Weather Centre in Whitehorse and the Weather Offices at Yellowknife, Inuvik, Resolute and Frobisher Bay. A technician assigned to the Fire Control Centre in Fort Smith and a meteorologist in Whitehorse provided fire weather services. The Arctic Weather Centre again provided special weather, wave and ice forecast services to Canmar and Esso for operations related to hydrocarbon exploration in the Beaufort Sea.

Special forecast support was provided to private meteorological companies with contracts to provide site-specific weather, wave and ice forecasts to Esso and Quintaine drilling operations in the Davis Strait.

Meteorological data are acquired from 49 synoptic stations and five automatic stations. Data were also provided from 14 aerological stations (of which 13 have been equipped with the Automatic Data Reduction System called ADRES) which provide upper air wind, temperature and humidity measurements. An additional 93 climatological stations provided extreme daily temperatures, precipitation and other weather elements.

Special observations are made of other parameters at various sites in the North as follows.

Hours of bright sunshine	25
Snow surveys	27
Freeze-up/break-up of ice	53
Ice thickness	23
Shore ice	6
Water evaporation	8
Soil temperatures	6
Aerosols	5
Carbon dioxide	2
Radioactivity	6
Ozone	1
Noctilucent clouds	18
Seismic activity	4

Reports were obtained from seven ships during the navigational season. Discussions continued with DIAND regarding hydrometeorological data requirements in the North. There are now 21 Arctic Aviation Weather Reporting Stations (AAWRS) and one Private Aviation Weather Reporting Station (PAWRS) operating north of 60°. Instruments were installed and the AAWRS weather station at Broughton Island was certified. AES maintained a routine program of equipment inspection, and on-site training of Inuit observers.

Courses to train northerners as observer-communicators for AAWRS were held in Fort Smith in September-October, 1980, and in January, 1981. The GNWT has assumed full responsibility for observer-communicator training as of April 1, 1981.

A new contract to continue operating the weather station was negotiated with the Toonoonik-Sahoonik Cooperative in Pond Inlet. Training in meteorological observing was provided to Inuit at contract stations during the year.

Discussions involving AES, MOT and the Government of the Northwest Territories continued into the future status of the Fort Reliance weather station. A need for manned observations was identified, but a mechanism for continuing operations at the site has not yet been established. Negotiations between MOT and Echo Bay Mines continued in relation to the development of a program of manned observations from the mine site of Lupin. This program will replace the observations from Contwoyto Lake.

The weather office in Frobisher Bay was renovated in 1980. A new chart display was installed. International flight briefings were initiated in April, 1981, to serve the pilots flying the new commercial route between Frobisher Bay and Godthaab in Greenland. Radio broadcasts of weather and forecasts were made in English and French for the areas of Baffin Island, Keewatin and Nouveau Québec.

AES and MOT cooperated in a study into the need for aviation weather services in the North. Public meetings were held in Whitehorse, Inuvik and Yellowknife. A draft report was produced and circulated.

The Gill low pressure hydrogen generators are being phased out because of problems with chemical waste disposal, shipment of chemicals, deterioration of the generators, and safety regulations. Bottled helium is being substituted as a back-up system.

At Baker Lake, the operations building was relocated about half a mile northeast of the settlement. A newly constructed hydrogen inflation building became operational in October, 1980. The latter structure is equipped with a modified electrolyser, and a sophisticated gas evacuation and gas-and-fire detection system. This represents the most recent state-of-the-art advances in technology and safety.

Teletype circuit 110 is operating well. It was extended from Hay River to Sachs Harbour using ANIK satellite facilities. A new satellite communications facility is being constructed in Northern Ellesmere Island in the summer, 1981. AES proposes to "piggy-back" weather teletype and telephone circuits on a DND microwave communication link between Alert and Eureka and a satellite link between Eureka and Ottawa. The unique communication network, called Project Hurricane, is expected to be in operation by 1982-83. Preliminary investigation has begun to extend teletype circuit 152 to Pond Inlet, Clyde, Cape Dorset and Koartak in the eastern arctic. This will improve the collection and distribution of weather data both domestically and internationally.

During July, 1980, and January, 1981, a boundary layer study was undertaken at Resolute by the upper air technicians. Two extra upper air soundings were made daily for one week in the summer and again in the winter season.

Regional Scientific Services Division, staffed with meteorologists specializing in applied meteorology, assessed environmental impact statements. All new development initiatives in the North are reviewed by the Regional Screening and Coordinating Committee. Scientific Services coordinated Environment Canada's contribution to the green paper on Lancaster Sound. Climatological requirements for the Yukon and the Northwest Territories are reviewed periodically by the division to identify areas of economic development and assure an adequate data base of climatology.

Services included coordination of pool housing for approximately 70 employees; advice and guidance to employees relocating; procurement of goods for northern shipments; maintenance of major AES facilities; coordination of safety programs; maintenance of financial systems for costing special services; and collection of revenue.

Plans for 1981-82

Renovations to the Yukon Weather Office were not started until March, 1981. It is expected that these renovations will be completed allowing the installation of a Hewlett-Packard mini-computer for forecasting at Whitehorse. Planning continues for the acquisition of a satellite imagery receiving station for the Yukon Weather Office.

Renovations will be made to meteorological equipment at Frobisher Bay, Clyde and Cape Dyer. The weather office at Frobisher Bay may be moved and located with MOT operations closer to the air terminal building.

Environmentally controlled rooms to house the mini-computers for ADRES will be undertaken in 1981 at Baker Lake. At Mould Bay, a power-house will be constructed and the three power plants will be connected to a heat recovery system linking the sleeping quarters, main garage, operations building and food warehouse. Two new power generators will be installed at Eureka. They will be equipped with a heat recovery system to the main garage, sleeping quarters and operations building. A salt water de-salination plant will also be installed to process about 3 000 gallons of potable water daily.

Proposals resulting from the AES Communications Study will be considered and appropriate improvements will be implemented. Plans will be drawn up by AES and MOT to implement recommendations of Arctic Aviation Weather Service Requirements.

FSD will continue to provide up-to-date information, forecasts and warnings, scientific consultation on arctic projects, and climatological information for northern activities. Networks and communications systems will be inspected and maintained regularly. Special support programs for offshore activities will be provided.

Scientific Programs Coordinator

Review 1980-81

The Scientific Programs Coordinator was involved with the "Guidelines for Meteorological and Oceanographic Services and Data Support for Drilling Operations in the Canadian Offshore". He also contributed to the draft "Guidelines for Operators' Oil Spill Contingency Plans", and draft guidelines for the preparation of Environmental Impact Statements.

Plans for 1981-82

Projects to be considered include the review of the draft green paper on Lancaster Sound, Beaufort Sea Hydrocarbon Development Guidelines, the Arctic Pilot Project and the Norman Wells Oil Field and Pipeline Proposal.

Science Adviser

Responsibilities

The science adviser provides science-related advice on departmental policies and evaluates departmental scientific activities. The office studies scientific and technical information on the environment and the use of environmental resources in relation to government objectives and economic and social development, including northern regions. It develops techniques for obtaining scientific knowledge of the environment and indicates possible consequences of change.

Review 1980-81

The office coordinated Canadian interests in multinational research programs in polar regions in marine-atmosphere heat exchange, ice dynamics, geophysics, arctic tectonics and environmental changes. It contributed to reviews of environmental information in the North and to information and appraisal of the effect on the environment of energy activities in northern Canada and Alaska. The office helped draft proposals for departmental policies and positions on major northern issues.

Environmental Management Service

Canadian Wildlife Service

The Canadian Wildlife Service (CWS) conducts research, manages and administers programs concerning migratory birds under the Migratory Birds Convention Act and the Canada Wildlife Act. The service coordinates federal, provincial and territorial action on wildlife programs, surveys and inventories. It undertakes research on wildlife habitats, collects and analyses animal population data, and studies wildlife diseases and the effects of toxic chemicals on wildlife.

Migratory Birds Studies

Review 1980-81

The Canadian Wildlife Service coordinated the Canadian segment of the 1980 North American Peregrine Survey as in 1970 and 1975. Surveys were carried out throughout the Northwest Territories, documenting the status of the peregrine falcons breeding in the North. The result of the 1980 surveys will be published in a forthcoming issue of the Canadian Field Naturalist.

The Canadian Wildlife Service continued its ongoing whooping crane program in Wood Buffalo National Park. This program involves research into the breeding biology and population ecology of the only wild flock of whooping cranes in the world. It also forms a program with the U.S. Fish and Wildlife Service to transplant excess whooping crane eggs to Gray's Lake, Idaho. These eggs, placed in sandhill crane foster nests, are an attempt to create a second wild flock.

The ecological assessment activities were directed toward the Beaufort Sea production development and various transportation scenarios. This included regional surveys of the Beaufort Sea, Prince of Wales Strait, Viscount Melville Sound

and western Victoria Island. Site specific studies were done at McKinley Bay and Baillie Island. A five-year process study to address ecosystem impact implications was started in the Hells Gate-Cardigan Strait polynya region and will be continued in 1981-82.

A tour of U.S. refuges and hunting areas by native representatives from the NWT and Yukon was coordinated by the native harvest surveys program with assistance from the USFWS.

Plans for 1981-82

Follow-up studies of peregrine falcon populations will be carried out in selected areas of the Northwest Territories. This work will be complemented by the collection of samples of prey species for toxic chemical analysis.

Whooping crane investigations at Wood Buffalo National Park will continue, as will the whooping crane egg transplant program in Gray's Lake, Idaho.

The five-year process study addressing ecosystem impact implications in the Hells Gate-Cardigan Strait polynya region will continue.

Mammalogy Studies

Review 1980-81

Field work continued on population dynamics and behavioral biology of polar bears. A two-part study on the reproductive biology of polar bears and the fidelity of polar bears to their maternity denning area was started in the Hudson Bay coastal region.

Research continued on inter-island movements of Peary caribou, a threatened species, in the Somerset-Prince of Wales



Lowell Glacier from Goatherd Mountain. Kluane National Park. Photo: Parks Canada.



Peregrine Falcon. Photo: CWS.

islands regions. Reconnaissance of traditional winter ranges showed that the population had not yet started to recover from the severe die-off and low productivity experienced in the 1970's.

Barren-ground caribou continued to be a major concern from Yukon to Labrador. CWS, in cooperation with the Yukon Game Branch, monitored distribution and movements of the Porcupine caribou herd in terms of the effect of the Dempster Highway on migration. In cooperation with the NWT Wildlife Service, CWS began studies of the digestibility of forages used by barren-ground caribou on winter range. CWS, concerned about the decline in the populations of the Kaminuriak and Beverly herds of barren-ground caribou, participated on the Caribou Technical Committee.

A herd of wood bison, another endangered species, was released in the wild near Nahanni Butte, Northwest Territories in June, 1980. Monitoring of these animals is continuing. Potential transfer sites in southern Yukon were assessed.

Research was initiated on polynyas and their importance to marine life. A comprehensive literature review on the present knowledge of polynyas was completed.

Field studies on wolf/bison relationships continue in Wood Buffalo National Park as part of a project to determine the impact of wolf predation on bison and to explain general questions of predator/prey relationships.

Continued work is planned on polar bears, including studies of their behavior and ecological relationship and the fidelity of female polar bears to maternity den sites.

The CWS will continue to organize a Caribou Management Board and to investigate the possibility of Manitoba and Saskatchewan being given legal sanction to regulate hunting of endangered caribou by natives. Research will continue on the Beverly and Kaminuriak herds of barren-ground caribou.

Negotiations will continue regarding a possible reintroduction of wood bison to Yukon.

Environmental Studies

A natural resource inventory was conducted for Parks Canada on a potential national park site on Axel Heiberg Island.

A natural resource inventory report on Axel Heiberg Island will be prepared.

Inland Waters Directorate

National Hydrology Research Institute

The National Hydrology Research Institute carries out scientific studies of surface water, ground water, snow and ice. These studies include both process and applied research as well as modification and development of instrumentation and technology for laboratory and field analysis.

Ground Water Division

Responsibilities

The Ground Water Division research programs emphasize the development of hydrological techniques, methodologies and instrumentation for ground water resource evaluation and ground water aspects of environmental impacts.

Review 1980-81

The final report on *Morphology, Hydrology and Hydrochemistry of Karst in Permafrost Terrain near Great Bear Lake, NWT*, was prepared. It should be published during 1981.

Time-lapse cameras installed at icing problem icing sites at Alaska Highway km 1676, km 1743, km 1817.5 and km 1823. In March, 1981, ice levels were marked and core samples obtained from the icings, ground water and snow pack samples.

In the fall, 1980, eight time-lapse cameras were installed at problem icing sites at Alaska Highway km 1676, km 1743, km 1817.5 and km 1823. In March, 1981, ice levels were marked and core samples obtained from the icings, ground water and snow pack samples.

In the Pine Point area three gauging stations at karstic springs were operated and hydrogeochemical sampling continued. The data taken are being evaluated. A report on *Ground Water Occurrences near Mining Developments in the High Arctic* is in preparation.

Plans for 1981-82

Time-lapse cameras installed along the Alaska Highway will be retrieved and the film processed. Ice thicknesses will be measured and a final set of samples collected.

Samples collected between 1972 and 1979 from Yukon and the District of Mackenzie will be reanalyzed by the University of Calgary Isotope Laboratory to determine oxygen isotope abundances in the sulfates. This will test the usefulness of the method in stratigraphic and geochemical studies. Final field studies in the Pine Point area are scheduled for 1981-82.

Surface Water Division

Responsibilities

The Surface Water Division conducts basic and applied research in permafrost hydrology. It provides consultative services on northern water problems and carries out specific water-related studies.

Review 1980-81

Field investigations of suspended sediment regimes and sediment transport of the Muskwa and Fort Nelson rivers in the Liard River basin were completed. Thermal infra-red imagery of Liard tributaries and their confluences was acquired in June, 1980. These images, combined with colour aerial photographs taken at the same time, are being used in the assessment of surface temperature distributions and

mixing. Field observations of ice thickness, break-up and ice jamming were also made along the Liard River. Liard basin studies were conducted on behalf of the Mackenzie River Basin Committee and reports are in final preparation.

Aerial photographs taken when ice was running in the Mackenzie River are being used to map surface water velocities. If stereophotogrammetric techniques can be used to determine surface water velocities where cross-sectional river profiles are known, it may be possible to estimate discharge quite accurately during the season when conventional discharge measurements are difficult.

On the lower Mackenzie and in the Mackenzie Delta, ice observations of freeze-up, ice thickness and break-up were taken to improve the data base.

In the Mackenzie Delta proper, an investigation of the water level regimes of a variety of lakes began during the 1980 field season. This will yield baseline information to assess the potential impact of increased flow regulation that will result if dams are constructed on the Liard River.

East of the Mackenzie Delta, data were collected at three basin sites in the taiga zone south of Inuvik and at seven basin sites in the tundra zone between Inuvik and Tuktoyaktuk. Surveys of culvert ice accumulation, late winter snowpack water equivalent, discharge and meteorological elements were made in the basin. A brief progress report was submitted to DIAND in July, 1980. A full report on activities will follow.

Thermal regime data and hydrologic data are being analysed for rivers which freeze to their beds in the continuous permafrost zone. A selection of finite difference ground water models was reviewed to select a procedure for mapping the hydrothermal pattern beneath and intermittent river channel. Because of the complex linkages between river stage, channel ice formation and the ground water thermal and fluid fluxes, the simulation process is still in the experimental stage. River sites under examination are located on Melville Island and near Inuvik, NWT. The study is relevant to oil and gas pipeline construction.

Highway-related hydrologic studies east of the Mackenzie Delta will continue. The lake regime program in 1981-82 will emphasize time-lapse photo observation of water levels. Some expansion of the number of test sites is contemplated.

The timing of and processes involved in freeze-up and break-up of Mackenzie Delta channels, and the Mackenzie River below Fort Norman, will again be examined by aerial photography. Ice thickness, water temperature and other pertinent observations will be taken during the field season.

Research on hydrothermal effects near and under arctic streams will near completion through publication of papers dealing with the Inuvik and Melville Island areas. Analysis will continue on the simulation of hydrothermal patterns under arctic stream beds.

Snow and Ice Division

Responsibilities

The Snow and Ice Division studies hydrologic processes in the North and their impact on northern development. It researches the mechanical and electrical properties of snow and ice, examines glaciers, mountain snowpacks, snow metamorphism and other aspects of alpine hydrology. It develops and maintains an inventory of perennial snow and ice in Canada.

Review 1980-81

Canadian glaciers contributing to the North Water polynya have been counted in a cooperative study with the Geographisches Institut of ETH-Zürich.

A newly-constructed "Rufli-Rand" electromechanical ice core drill was used at an elevation of 5340 m on Mt. Logan, Yukon Territory. Three holes were drilled. Core should yield climatic "proxy" data for about the last 500 years. A new bore-hole notch reamer was used to notch the deep borehole.

Plans for 1981-82

A resurvey of the Mt. Logan core site will be carried out to establish the time-depth relationship, and to recover the balance of the cores obtained during the previous field season.

Water Quality Branch

Responsibilities

The Water Quality Branch collects, analyses, interprets and disseminates water quality data. These data are obtained from specific reference points across Canada and augmented by detailed information collected in comprehensive surveys.

Review 1980-81

The branch supports federal programs related to national parks and data collection and surveys in Yukon and Northwest Territories. The branch participates in the analysis of samples and storage and dissemination of data collected in the territories. The work for the Northwest Territories is administered by a group from the Inland Waters Directorate offices in Calgary and Winnipeg and for Yukon, from the Pacific and Yukon office in Vancouver. The branch participates in joint studies with DIAND.

Other activities included participation in reviews of the petroleum industries' environmental impact statements on the Beaufort Sea, Mackenzie Valley and Norman Wells developments. A detailed water quality data report was prepared and published for the territories for 1974 to 1976. The branch contributed to a preplanning study on the Yukon River basin.



Windy Lake, Auyuittuq National Park. Photo: Parks Canada.

Plans for 1981-82

A detailed water quality data report for the territories for 1976 to 1979 will be prepared and published. The branch will participate in the planning of a Yukon River basin study with DIAND, British Columbia and Yukon.

Responsibility for the administration of the IWD programs will shift from Calgary and Winnipeg to Yellowknife on the appointment of a water quality specialist to a newly opened IWD office.

Water Planning and Management Branch

Responsibilities

This branch develops water resource studies and programs to reduce flood damage and improve water management. It advises the Northwest Territories and Yukon on water planning and management matters. The branch participates in environmental assessments of development projects.

Review 1980-81

The branch participated in negotiation of the Yukon River Basin Agreement which was signed November 24, 1980, by Ministers representing Canada (Environment, Indian Affairs and Northern Development), British Columbia and Yukon Territory. The agreement provides for an inter-governmental committee to direct studies, over a three-year period, at a total cost of \$2.2 million. This will assess resource development alternatives in the Yukon basin in Canada.

Work began on mapping flood risk in six communities in the Northwest Territories, under a Flood Damage Reduction Agreement signed in 1979. Negotiations were undertaken toward a similar agreement for Yukon Territory.

Studies by the intergovernmental Mackenzie River Basin Committee of water and related resources, begun in 1978, were largely completed.

Plans for 1981-82

An intergovernmental task force reporting to the Yukon River Basin Committee is under instructions to develop a program with project descriptions. The committee will establish priorities and procedures for initiating work under its three-year mandate.

Negotiations will continue toward effecting a Flood Damage Reduction Agreement for Yukon.

A final study report and eight supplements for the Mackenzie River Basin Study will be given final review by the Mackenzie River Basin Committee before submission later this year to the Governments of Canada, Alberta, British Columbia and Saskatchewan.

Water Resources Branch

Responsibilities

The Water Resources Branch operates through two divisions, the Water Survey of Canada Division and the Hydrology Division. There are eight Water Resources Branch regional establishments across Canada. They are located at Vancouver, Calgary, Regina, Winnipeg, Guelph, Halifax, Yellowknife, and

Longueuil, P.Q. Water Resources Branch programs in effect in Yukon Territory are administered by the Vancouver Regional Office.

The responsibilities of the Water Resources Branch include collecting, processing, analysing, storing, interpreting and providing water quantity and sediment data for water resources management.

The branch provides advice and assistance in preparation of briefing notes, and background and position papers for developing policies and priorities on various aspects of national water programs.

Water Survey of Canada Division (Headquarters)

Responsibilities

The Water Survey of Canada Division (Headquarters) provides technical support to the survey's regional offices. It develops techniques, instrumentation and standards for collection of data. It publishes these data, maintains data banks, does network planning for sediment stations, conducts hydrometric field surveys, measures river discharge, measures sediment deposition and carries out morphological surveys and studies.

Review 1980-81

An automated moving boat flow system was used to measure tidal-induced unsteady flows. Data collection platforms (DCPs) in both the GOES and TIROS-N modes were field tested. Units of both modes are now in operation in several regions. The ground receiver site at Prince Albert for satellite retransmitted data was upgraded and is now operational. A study was conducted to determine future Water Survey of Canada electronic data processing requirements.

Plans for 1981-82

A solar energy power system to power instrumentation at hydrometric stations will be developed in cooperation with the National Research Council. Also under development are DCPs which accept data from a combination of hydrometric and meteorological sensors. A digital solid state data recorder will be field tested. These recorders will eventually replace the analog strip chart recorder at selected sites.

Work will continue on the development and testing of the moving boat flow measuring system. The next model scheduled for testing in May, 1981, will incorporate a micro-processor and will allow the computation of flow as the measurement is in progress. A possible site for the use of the system in 1981 is the Mackenzie River.



Polar Bear. Photo: CWS.

Water Survey of Canada Division (Regional)

Water Survey of Canada collects, computes and publishes surface water data for most of Canada. Besides operating a network of hydrometric gauging stations, it collects water samples for analysis. It also constructs, operates and maintains water-level recording stations to provide information on tides and water levels. The division operates laboratories for the analysis of suspended sediment, bedload and bed material samples.

Seven new gauging stations were constructed in Yukon Territory. Of these, four were classified as territorial (requested by the Northern Canada Power Commission — NCPC) and three were designated federal-territorial. This brought the number of stations operated in Yukon to 63.

A Regional Office at Yellowknife was established which took over the administration of NWT programs. A regular hydrometric data acquisition program was carried out at 127 stations. Six tidal stations and two sediment stations were also operated. Of the 127 hydrometric stations, 13 were equipped with DCPs. The division installed and operated four meteorological stations for DIAND and provided water level elevation forecasts for the Mackenzie River.

In Yukon Territory the division will continue to operate the network of gauging stations. Three new stations are planned for construction during the year. Of these, two will be designated territorial and one federal-territorial. Reconnaissance work is scheduled for three additional proposed stations, two territorial and one federal-territorial.

In the NWT, the immediate plan is to complete staffing of positions. The current program of operating the 127 hydrometric, six tidal, two sediment and four meteorological stations will continue. No real expansion is forecast. Reconnaissance work for the installation of future stations will, however, be conducted and a hydrometric survey of a number of cross-sections on the Peace River will be carried out. The latter project will provide data for input to a mathematical model study requested by the Canadian Wildlife Service.

The Hydrology Division (Headquarters)

This new division meets the challenge of rationalizing data collection and analysis activities. The work represents a major shift into more analysis and interpretation of hydrologic data on a national basis. The division will adapt or develop the most modern techniques and ensure the transfer of technology to the regional offices. This will assist the Water Survey of Canada with identification of both redundancies and gaps in the data and help ensure that the data collection, processing and publication meets the needs of both public and private sectors.

Two physical scientists were appointed in mid-1980. The division became modestly operational and two computer programs for hydrologic analysis were prepared and issued to all regional offices of the Water Survey of Canada. Technology transfer sessions were held for the Atlantic and Ontario Offices.

It is anticipated that four more scientists and one computer systems analyst will be appointed.

Lands Directorate

The directorate researches and provides data on the ecological characteristics, potential land use, changes in land use, and land use issues. The directorate develops systems to collect, store, and present land data. The directorate also provides policy advice on land matters, promotes environmentally sound land planning and management, and undertakes cooperative land research and planning programs with other federal agencies and the provinces.

Land Resources and Data Systems Branch

The Land Use Monitoring Division continued its research and production of the Land Use Information Series maps of the Northwest Territories. The compilation, drafting and printing of 31 maps (scale 1:250 000) has been completed for the Wager Bay-Back Lowland area in the northern Keewatin. Research work and surveys were carried out for 29 map sheets in the north Baffin Island area.

The Land Use Information Series maps are now available for most of the mainland area of Yukon and the Northwest Territories. They integrate a wide range of data on renewable resources and related human activities. They include information on wildlife and fish habitat areas, native hunting and trapping areas, community information, development areas, mineral resources, historical sites and ecological characteristics.

The Ecological Land Evaluation and Classification Division provided a biophysical and ecological overview of the study areas. This included a description of the terrain, vegetation, climate, water characteristics, and coastal features.

The Ecological Land Evaluation and Classification Division also published ecoregion (scale 1:1 000 000), and ecodistrict (scale 1:500 000) maps for northern Yukon. These data have been entered into the Canada Land Data System and interpreted for such topics as critical habitats for fish overwintering, terrain sensitivity, landscape esthetics and special features. A demonstration and discussion map for a proposed northern Ecological Land Survey (NELS) series was also completed.

Plans for 1984-85:

The compilation, drafting and printing of 29 Land Use Information maps of the north Baffin Island area will be completed. Field research and map compilation will be carried out for the 9 maps in the Viscount Melville Sound area. Reports and papers relating to this program will also be published.

The Ecological Land Evaluation and Classification Division is undertaking a generalized ecodistrict map series (scale 1:1 000 000) for the Northwest Territories. Information on physiography, vegetation, coasts, climate, water, soils, and wildlife will be coded for storage in the Canada Land Data System. Research will be initiated on semi-detailed ecodistrict maps (scale 1:500 000) for the areas adjacent to the Beaufort Sea. Much of this information will be aimed at supporting regional land planning and management functions.

Policy Research and Development Branch

Plans for 1984-85:

The Lands Directorate is developing more effective policies and strategies to guide DOE programming in the North, and to improve coordination with DIAND on land use planning in the North.

The Lands Directorate is also coordinating a DOE working group, established in mid-1980, to complete a DOE Northern Conservation Land Inventory. This initiative will identify environmentally or historically significant areas North of 60° from the perspective of Parks Canada and Canadian Wildlife Service programs. CWS and Parks Canada inventories were completed in 1980-81.

Plans for 1984-85:

The Lands Directorate will be completing a summary report on the Northern Conservation Land Inventory for review by senior departmental officials early in 1981-82.

Pacific and Yukon Region

Advice and services were provided to the Resources Inventory Program of the Yukon government through membership on the Technical Advisory Committee. The Kusawa Lake pilot study, designed to provide planning information for DIAND and the YTG, was completed.



Wood Buffalo National Park, NWT

Activities during this period will include a continuing review of the Alaska Highway gas pipeline documents and input to the Northern Pipeline Agency/Foothills Pipelines programs.

Advice and services to the Yukon Government Resources Inventory Program will be continued. It is also anticipated that ecodistrict information for five 1:250 000 map sheets in the MacMillan Pass area will be provided to the Yukon Government Resource Inventory group.

Canadian Forestry Service

Responsibilities

The service advises and assists DIAND on forestry operations, practices and staff training. It participates in environmental impact assessments of industrial developments, conducts forest insect and disease surveys, prepares forest inventories and maps of forest and other vegetation and conducts ecological research in the North. The service compiles national statistics on forest stocking, growth, depletion and fire losses.

Pacific Forest Research Centre (PFRC)

Responsibilities

The Yukon Forest Research Advisory Committee advises the PFRC on forestry research needs and priorities in Yukon.

Review 1980-81

Fifth-year assessments of the seedling and planting trials were conducted and seed traps were monitored. A study was initiated to assess softwood regeneration and complete revegetation of cutover lands and burnt areas to determine the effects of cut-and-leave management techniques on river floodplains.

The certification of lodgepole pine seed was continued. A meeting with the Swedish National Board of Forestry was attended to discuss future demands for lodgepole pine seed from British Columbia and Yukon. An IUFRO meeting was attended in Sweden on *Pinus contorta* as an exotic species. Seed testing for purity and germination was continued. Forty OECD certificates of seeds for export and 86 international certificates for seed quality were issued.

A survey was initiated to document the distribution of lodgepole pine in Yukon through the use of satellite imagery. Check points were located in the field.

Vegetation distribution and forest capability maps for Ecoregion 5 were produced using satellite imagery. Maps were produced from visual assessment of spectral signatures and ground examinations. The technique was extended to Ecoregions 1, 2 and 3.

Additional work was conducted on forest stratification, partitioning the forest environment into stocked softwood and hardwood stands and non-stocked lands. Programming problems prevented the completion of this analysis.

The updating of Yukon Renewable Resource and Management Statistics (RRAMS) did not proceed as anticipated due to programming problems.

The ecological land resource inventory of the proposed Kusawa Lake Territorial Park was completed. A field tour, attended by territorial land managers and planners, was held in the area and an explanation of the data base was presented.

A survey of the vegetation of the East Kluane Planning Area was initiated. Advice and instruction was given to the territorial government's resource inventory program.

Initial preparations including a field tour and discussions with Parks Canada were done to aid with development of a fire history and management plan for Kluane National Park. The fire management plan is to include data on frequency and location of fires, fuel, fire behavior and the effects on vegetation and wildlife.

A forest biomass study, part of a national program, was initiated in Yukon. A total of 400 trees were measured. A report, which will include biomass equations for Ecoregions 2, 4, and 5, is forthcoming.

The annual forest insect and disease survey was conducted.

Plans for 1981-82

The fifth-year assessments of seedling and planting trials will be concluded. Monitoring of seed traps will continue. A large-scale photosampling study, to assess cut-over lands for softwood regeneration, will be completed. A new study will be initiated to determine ecological factors which control natural regeneration of white spruce on floodplain sites in the Liard River drainage.

The certification of lodgepole pine seed will be continued. Stand management plans will be worked out with the Yukon Lands and Forest Service. Seed testing for purity and germination will continue.

Generalized forest capability ratings will be conducted in Ecoregions 1, 2 and 3 along with maps showing vegetation distribution using satellite images. A similar assessment will be initiated in Ecoregions 4, 6, 7 and 8.

The vegetation mapping of East Kluane Planning Area will be completed. Advice and instruction on ecological mapping will be given to the territorial government resource inventory team.

Plans have been made to develop the necessary programs for the GEMS 300 to allow supervised classification and transfer to tape. The tape will be sent out for further analysis, incorporation of UTM grid, statistical analyses and a hard-copy picture. This will allow the forest stratification and updating of RRAMS to proceed.

The survey will continue on lodgepole pine distribution using satellite imagery. It is anticipated that four classes: pure pine, predominantly pine, predominantly spruce and pure spruce will be distinguishable.

The Yukon biomass study will continue. It is anticipated that an additional 500 trees will be measured.

The fire history study and other work relevant to developing a fire management plan in Kluane National Park will commence. A report is anticipated in 1982. Advice will be given to the Yukon Game Branch concerning a planned prescribed burn for sheep habitat improvement on the north side of Kluane Lake.

The forest insect and disease survey will continue.



Whooping Crane

Northern Forest Research Centre

Responsibilities

The centre protects and conserves terrestrial resources by assessing the impact of proposed developments on the vegetation and terrain, ensuring that environmental effects are considered in planning and development projects. It provides advisory and technical services on forest regeneration, forest inventory, forest fire, insect and disease attacks, satellite imagery, aerial photography and timber management.

Review 1980-81

Northern Forest Research Centre contributed to the environmental assessment of Liard Highway, Norman Wells Pipeline, shore based facilities, and Tanker Oilspill Overview study. The centre prepared and presented the Canadian Forestry Service concerns at Environmental Assessment Review Process hearings on the Norman Wells Oilfield Development and Pipeline proposals and the Arctic Pilot Project. The potential of Axel Heiberg Island for a national park was investigated. Field work was completed on Axel Heiberg Island and on northern Ellesmere Island. NFRC provided assistance to the Yukon Forest Service in sampling design, aerial photography and interpretation for forest regeneration. It conducted aerial and ground surveys for spruce budworm in the Fort Smith and Fort Simpson areas.

Plans for 1981-82

NFRC will continue to participate in the assessment of various major industrial development proposals through the Regional Screening and Coordinating Committee. Using a multistage design incorporating satellite imagery, aerial photography and ground sampling, the centre will provide information for forest fire and timber management. It will initiate computer mapping techniques for mapping of the North. Annual surveys of insects and diseases will be carried out. A feasibility study is under way concerning a container growing facility at Fort Simpson. The assessment of forest fuels and their correlation with forest cover to predict rates of fire spread will be continued. NFRC will supervise an ENFOR contract to develop individual tree weight prediction equations.

Petawawa National Forestry Institute

Review 1980-81

A study was initiated to develop special modifications of the Canadian Forest Fire Danger Rating System to take into account high latitude effects on fuel moisture and fire behavior in the territories. Work started on a methodology for the appraisal of post-fire economic impact for the Northwest Territories.

Plans for 1981-82

The institute will continue these studies and respond to needs in forest research north of 60°.

Parks Canada

National Parks Activity

Responsibilities

National Parks evaluates areas and sites to determine their potential as national parks and landmarks. It plans and manages the existing national parks.

Review 1980-81

The Minister released a report in April, 1981, outlining progress on five national park proposals and one national landmark proposal in the Northwest Territories and Yukon.

A Federal/Territorial Parks Consultative Committee was established in the NWT. It held its first meeting in Yellowknife October 28, 1980. The committee provides an opportunity for officials of Parks Canada and territorial agencies to discuss areas of common interest and concern. The process of national park establishment, the socio-economic impact of national parks, resource management and the protection of archeological areas are some of the items under study.

Plans for 1981-82

Principles are being developed under which land on Ellesmere Island would be withdrawn under the Territorial Lands Act for a national park.

A consultation process is being prepared to determine the final disposition of land already withdrawn for a national park reserve at Artillery Lake/East Arm, Great Slave Lake.

Kluane National Park

Plans for 1981-82

The Management Plan for the park is being prepared. The plan will be completed in the fall of 1981. The plan will be discussed with the public in the fall, 1981. The plan is expected to be ready for approval early in 1982.

Plans for 1981-82

Area planning will begin in April, 1981, to carry out a comprehensive assessment of the Slims River Valley and the feasibility of providing access to the Kaskawulsh Glacier, one of the prime interpretive areas of the park.

The park has been selected as a pilot area for fire management planning.

Nahanni National Park

Plans for 1981-82

Regional Officials of Parks Canada participated in a study of a possible territorial park in the Blackstone River area. Parks Canada may relocate some of its Nahanni operations in that area. Facilities at Nahanni Butte were destroyed by fire in January, 1981. Loss was estimated at \$100 000.

Plans for 1981-82

A start on a management plan is expected.

Auyuittuq National Park

Plans for 1981-82

Interim Management Guidelines initiated for this park in 1980, will continue in 1981. The guidelines involve a program of consultation with local residents.

Two staff houses were purchased in 1980-81. The completion of the new housing is scheduled for the 1981-82 fiscal year.

Wood Buffalo National Park

Review 1980-81

A Management Plan is being prepared for this park. Public meetings were held in the local area, Yellowknife and in Alberta between January and March, 1981. Issues discussed included park boundaries, logging, hunting, trapping and fire management. The park experienced another extreme fire season as more than \$1.5 million was spent on fighting 59 fires in 1980.

Plans for 1981-82

The management planning process will continue with alternative management strategies being developed. They will be discussed with the public in the fall, 1981. The plan is expected to be ready for approval early in 1982.

Three new interpretive exhibits are under preparation and

Klondike National Historic Sites

Review 1980-81

Recorded to Yukon to assist

Parks Canada worked closely in the preparation of community development and tourism plans with officials of Yukon Territorial government, officials of DREE and the City of Dawson.

Additional decentralization of staff took place with archeology staff transferred from the region in 1980 and extant recording being transferred April 1, 1981.

An agreement was reached with Yukon government to contract the Bear Creek access road on a cost-shared basis. This will permit better security for historic resources in the area.

Tenders were called for proposals to operate Mme. Tremblay's Store in 1981-82.

A woodworking shop, equipped to deal with the restoration of heritage structures in Dawson City and environs, is expected to be operational in 1981-82.

S.S. Klondike National Historic Site

Review 1980-81

Restoration work on the ship continued and its refurnishing started.

Plans for 1981-82

A small visitor services building is under construction. Parking and other site improvements have been completed.

REVIEW: FURTHER 5.1

Plans for 1981-82

Agreements for Recreation and Conservation

Responsibilities

An ARC agreement defines the required developments, assigns responsibility and allocates costs among the participating agencies.

Yukon River Heritage Area

Review 1980-81

Meetings were held with the Northern Environment Branch of DIAND to outline ARC's role in the Yukon River and to examine the future course of action towards the establishment of this heritage area.

Plans for 1981-82

Parks Canada will participate with the Yukon Department of Renewable Resources and Northern Lands in public consultations on the Yukon River Heritage Area Concept Plan.

Parks Canada will continue working with the Northern Environment Branch of DIAND to seek means of reaching agreement on the Yukon River Heritage Area.



Peary Caribou. Axel Heiberg Island. Photo: C W S

Canadian Heritage Rivers System

Review 1980-81

Plans for 1981-82

Parks Canada will finalize a proposal, based on the CHRS Task Force recommendations and Parks Canada viewpoints. This will be transmitted to provincial and territorial authorities. In the meantime, Parks Canada will continue to discuss with DIAND the issue of territorial participation in the system. ■

Department of External Affairs

EA

The Department of External Affairs' activities in the North involve the operations of foreign governments and their agencies. The department is a member of the Advisory Committee on Northern Development (ACND) and of several sub-committees. It advises on matters having foreign policy implications, maintains a coordination and operational role in matters of international law and policy relating to the arctic and negotiates agreements with other countries proposing activities in the North. Within the Department of External Affairs, a number of bureaus handle different aspects of arctic matters.

Energy, Industry and Science Relations

The Bureau of Energy, Industry and Science Relations coordinates Canadian policy on international and inter-governmental cooperation in arctic scientific and environmental matters. It advises ACND on international policy aspects of scientific conferences, international arctic expeditions, as well as bilateral and multilateral exchanges and agreements with circumpolar nations. The bureau facilitates international contacts between Canadian government departments and agencies and their foreign counterparts and is a focal point for consideration of requests of foreign interests to conduct scientific activities in the Canadian North. The bureau also coordinates departmental responsibilities in transportation matters, including international aspects of arctic civil aviation and arctic shipping. The bureau coordinates information gathering on external developments pertaining to arctic transportation technology and plays an active role in environmental issues in the OECD, UNEP and the UN Economic Commission for Europe (ECE).

The Bureau of Energy, Industry and Science Relations monitors foreign economic interest in the development of the Canadian North to ensure that such development is consistent with Canada's international commitments and policies and with domestic economic development objectives. The bureau also coordinates activities on the international aspects of the development of large energy projects in the arctic. In 1980, this involved contact with foreign countries interested in the commercial and environmental implications of the Arctic Pilot Project, a proposal to produce and ship liquified natural gas from Melville Island to markets in eastern North America or Europe. The bureau is involved with proposals for participation by other countries in the exploration and development of oil and gas reserves in the Beaufort Sea and the arctic islands.

Legal Affairs

The Bureau of Legal Affairs ensures that arctic activities and programs are consistent with existing and evolving principles of international law. In consultation with departments and agencies having specific responsibility for coastal waters and enforcement activities, the bureau is concerned with transit uses of Canadian arctic waters and provides the chairman for the interdepartmental Panel on Arctic Waters. The bureau coordinates Canadian action taken internationally to prevent ocean pollution as set out in the 1970 Arctic Waters Pollution Prevention Act.

European Affairs

The Bureau of European Affairs, which is responsible for the coordination of relations with the Nordic countries, handles exchanges and activities between Canada and these countries on issues related to the North. The bureau leads the Circumpolar Affairs Panel created in April, 1979, to promote greater coordination within the department on northern foreign policy questions. The bureau has pursued Arctic exchanges with the Soviet Union under the General Exchanges Agreement. However, such activities were suspended in 1980 as part of the Canadian government response to the Soviet intervention in Afghanistan. During 1980, the bureau followed closely discussions between Canadian and Danish authorities relating to resource development and the marine environment in the eastern Canadian arctic and west Greenland. Negotiations continued between Canada and Denmark on a proposed agreement for cooperation relating to the maritime environment. Related discussions on the environmental effects of the Arctic Pilot Project in the waters of Davis Strait and Baffin Bay also took place in 1980.

United States Affairs

The Bureau of United States Affairs coordinates Canada-United States relations in the arctic, including matters having to do with science, technology and communications. As well, the bureau coordinates bilateral energy, environment and transportation questions, particularly along the 1,000 km Alaska-Yukon border. The bureau is responsible for the foreign policy aspects of northern pipelines, which includes monitoring United States activities regarding the Alaska Gas Pipeline and the termination of the Haines-Fairbanks Pipeline. It coordinates the foreign policy aspects of Beaufort Sea oil drilling, ongoing consultations with the United States regarding environmental aspects of the Canadian exploration program and forthcoming U.S. lease sales. During 1980, it coordinated discussion papers and consultation with territorial governments, native peoples, and other interested public groups, regarding a proposed Migratory Caribou Agreement with the United States. The bureau is concerned with such northern environmental questions as transboundary pollution, migratory birds and wildlife, bilateral cooperation in creating and managing parks and historic sites, designating and managing wild rivers, and management of transboundary rivers. It also follows the progress of legislation before the U.S. Congress on Alaska National Interest Lands to ensure that Canadian interests are protected. In transportation, it is responsible for coordination of foreign policy aspects of such subjects as the reconstruction of the Haines-Alaska Road (Shakwak Project), and the White Pass and Yukon Railway.

International Security Policy and Arms Control

The Bureau of International Security Policy and Arms Control Affairs provides liaison between foreign governments and Canadian government departments, principally the Department of National Defence, in matters relating to the protection of Canada's security and sovereignty in the arctic. The bureau coordinates the evolution of Canadian-American cooperation in the arctic for the common defence of North America, including the Distant Early Warning Line.

The office of the Chief of Protocol, acting jointly with the Department of Indian Affairs and Northern Development, organizes an annual tour of the arctic for approximately 20 heads of diplomatic missions accredited to Canada. Thus, each head of a diplomatic mission is virtually assured of an opportunity to visit the arctic during a tour of duty in Canada.

Information

The Bureau of Information provides Canadian diplomatic posts abroad with documentation on northern issues and concerns. All posts received a detailed kit in 1980 commemorating the Canadian arctic islands centennial, and the bureau responded to enquiries about the North from foreign journalists. Photographs depicting arctic conditions, geography and people were sent to publications as part of the general information program.

Approximately 35 foreign journalists visited the North under the department's auspices during 1980.

The Bureau of Information purchased more than 100 copies of films dealing with northern Canada. These films were distributed to posts. New publications on the North were prepared, including reference papers on the Inuit, the Northwest Territories and Yukon. A number of existing publications were revised or reprinted during 1980.

International Cultural Relations

The Bureau of International Cultural Relations is responsible for travelling exhibitions of Canadian art, including two collections of Eskimo prints from the department's permanent collection and Inuit Retrospective, belonging to the National Museum of Man.

The bureau coordinates inclusion of Canadian sites on the World Heritage List. Two of the four Canadian sites on the list are in the North: the Kluane National Park in Yukon and the Nahanni National Park in the Northwest Territories.

To facilitate travel by persons residing in remote northern areas, the Passport Office prepared a passport information sheet which was sent to the Northern Operations Branch of the Department of Indian Affairs and Northern Development in the Yukon. The pamphlet provides directions on how to apply for a passport and directs attention to the services provided by the regional passport offices.

Departmental information services were extended to the two territories. Each year, a Commonwealth Day poster and teacher's guide are distributed to schools in the North. Many NWT and Yukon residents are on departmental mailing lists for press releases, speeches, statements and texts on Canadian foreign policy and international relations. From year to year, a group visit of Canadian mayors to the OECD (in Paris), NATO and the EC (in Brussels) includes a representative from either the NWT or Yukon. ■

Federal Environmental Assessment Review Office

FEARO

A federal Environmental Assessment and Review Process (EARP) was established by the Cabinet December 20, 1973, to assess environmental consequences of federal projects and to have the findings applied in plans, decisions, and actions.

EARP covers projects which need federal funds, or involve federal property, and are initiated or sponsored by federal departments and agencies. All federal departments and agencies are subject to the process, except proprietary Crown corporations and regulatory agencies which are invited to participate.

EARP is administered by the Federal Environmental Assessment Review Office (FEARO). Its executive chairman reports to the Minister of the Environment.

Under the process, departments and agencies screen proposed projects for potential adverse effects on the environment. If the effects are not apparent, a more detailed examination is made, known as an Initial Environmental Evaluation (IEE). FEARO encourages organizations to seek public response at an early stage of planning of activities that may be environmentally sensitive. If either the screening or the evaluation indicates potential significant effects, the project is referred to FEARO for a formal review. Each project is reviewed by an independent panel. The Minister appoints panel members from outside the federal public service. FEARO appoints members from within the federal public service.

A panel reviewing a project publishes guidelines for the Environmental Impact Statement (EIS) that is prepared by the organization planning the project. As part of its review, the panel holds public meetings and subsequently submits a report to the Minister. The report describes the major potential impacts of the project and contains conclusions and recommendations. Decisions on the panel's recommendations are made by the Minister of the Environment and the Minister of the initiating or sponsoring department.

An environmental assessment panel held meetings in eastern arctic communities during April, 1980, to review the northern component of the Arctic Pilot Project. This is a proposal by a consortium, including Petro-Canada, to produce and liquefy 6.4 million cubic meters of natural gas a day from the Drake Point field on Melville Island and ship it to eastern Canada by ice-breaking tankers. The project was jointly referred for review by the Department of Indian Affairs and Northern Development (DIAND) and Petro-Canada. In its report to the Environment Minister, the panel concluded that this component was environmentally acceptable and advocated formation of a control authority by the Minister of Transport to monitor ship movements and enforce good seamanship and appropriate environmental regulations. It also recommended that the Departments of Environment and of Fisheries and Oceans establish advisory committees to assist this authority. Committee members would represent the proponent, Inuit, territorial government, and federal agencies.

Toward the end of the year, federal representatives participated in a federal-provincial examination of two choices for the southern terminals and the sea approaches to them; Melford Point, Nova Scotia, and Gros Cacouna, Quebec.

During August, 1980, a panel completed a review of a proposal to expand oil production at Norman Wells, NWT, and to build an 866 km pipeline from there to join an existing line at Lama, Alberta. This proposal by Esso Resources Canada Ltd. and Interprovincial Pipeline (NW) Ltd. was referred by DIAND.

In the report, the panel said that more information was needed about the integrity of the six artificial production islands Esso plans to build in the Mackenzie River and the thermal regime of the pipeline. It also suggested that federal and territorial governments set up programs to deal with social and environmental impacts of the proposal. To allow time for these recommendations to be carried out, it urged that the project should not go ahead before 1982.

Plans for 1981-82

The eastern arctic off-shore drilling referred to FEARO in 1977, also known as the Baffin Bay exploratory drilling programs, is now more active. After a restructuring of the panel, supplementary guidelines dealing with social impact will be issued to the proponent Petro-Canada to finish its EIS. Public meetings will be held after decisions are made about the results of the Lancaster Sound Regional Study.

Information requested by the Alaska Highway gas pipeline panel in its 1979 report to the Minister is expected during 1981 and another public review will be held afterward.

A panel is being formed to review the Slave River hydro project, which calls for a hydroelectric installation at or near Fort Smith, NWT, near Wood Buffalo National Park, with a transmission line to Fort McMurray, Alberta. The province is conducting a two-year study and if this indicates the project is economically feasible, a review will be held.

An oil industry proposal for possible oil and gas production from the Beaufort Sea, with transportation to the southern markets by ice-breaking tankers or pipeline, is being reviewed. This review deals with environmental and social factors of a concept, rather than a specific proposal for a particular site. The panel is writing guidelines for the preparation of an Environmental Impact Statement. ■

Department of Fisheries and Oceans

DFO



Collection of water samples during an arctic oceanographic research cruise.

Responsibilities

The department is responsible for fisheries research and management throughout the Canadian north, drawing its authority from several acts, including the Fisheries Act. The department implements oceanographic and hydrographic programs and coordinates ocean policies and programs of the federal government.

Arctic fisheries management occurs under two regions, the Pacific (Yukon) and the Western (NWT). Enforcement and inspection programs, and to a limited extent management functions, are performed by Fishery Officers in the territories. Professional assistance for fisheries and fish habitat management is supplied through regional headquarters in Vancouver and Winnipeg. The Arctic Biological Station at Ste. Anne de Bellevue, Quebec, provides a marine biological research capability to the fisheries northern programs.

Activities are described under three headings: Fisheries Resources, Fish Habitat Management and Industry Services. These involve the conservation and protection of fish stocks, including both management and enhancement. There is also associated research; the evaluation of effects of industrial developments on fish; research on the ability of northern ecosystems to cope with adverse impacts; departmental input to the Federal Environmental Assessment and Review Process (EARP); and the development of terms and conditions for licences issued by other government departments. Other activities include monitoring of processing plants to ensure adherence to operating standards, advice on handling, processing, transportation, storage and distribution of fish products; laboratory analyses for contaminants in domestic and improved fish products, water and ice samples; inspection of freshwater species and fishing vessels; administration of grant assistance programs to fishermen for new vessels and the fishing vessel insurance coverage programs; and advice and guidance to industry on developmental programs concerning fishing gear, equipment and process development.

Fish Habitat Management Branch (Headquarters)

Responsibilities

The branch develops policy concerning fish habitat management and protection in the arctic. It provides headquarters representation on a number of interdepartmental committees concerned with northern development and environmental protection.

Review 1980-81

Fish Habitat Management Branch staff participated in activities instigated as a result of EARP Panel recommendations, specifically the Arctic Pilot Project and Lancaster Sound study. In the latter case, a green paper outlining options for future land and water use in the area is in preparation. Contributions were also made to several policy papers on northern development.

Staff assisted in the preparation of DFO's position statement for the Norman Wells Panel hearings and negotiations were conducted into problems associated with placer mining in Yukon and fish habitat protection.

Plans for 1981-82

Special emphasis will be given to problems associated with development in the Beaufort Sea — Mackenzie Delta area. In addition, attention will be directed towards improving institutional arrangements for environmental management in the North.

Northwest Territories

Fisheries Resources

Review 1980-81

Fishery management activities were carried out throughout the Northwest Territories. Activities concentrated on commercial, sport and subsistence (domestic food) fisheries.

Biological sampling, experimental gillnetting and tagging were carried out on Great Slave Lake to monitor the effects of commercial fishing of whitefish stocks. The second year of a stock identification program was completed. Commercial catches of anadromous arctic char from Victoria Island (Cambridge Bay) and the Keewatin coast were sampled. In addition, the third year of a five-year program to determine the stock identity of anadromous arctic char in Wellington Bay (Victoria Island) was completed.

The first year of a two-year study was completed to determine the feasibility of using a weir to take anadromous arctic char as part of a commercial fishery at Jayco River (Victoria Island). A two-year program was completed to assess the resources of anadromous arctic char for commercial fishing in the Gjoa Haven-Pelly Bay area. Preliminary investigations of the fish resources of the Mackenzie Delta/Beaufort Sea were initiated and the test fishery program (primarily for arctic char on Baffin Island) continued with cooperation from the Northwest Territories (GNWT).

Sport fishery investigations included surveys of numerous small lakes around Yellowknife to determine the sport fishing use/potential and suitability of some lakes for fish stocking. Road, aerial and water surveys of potential recreational fisheries along the Liard Highway route were carried out. There were creel counts, biological sampling, experimental gillnetting and tagging in a number of lakes in the District of Keewatin. Studies continued on the population dynamics and movement of lake trout in Great Bear and Great Slave (east arm) lakes. In the Hay River area creel census, biological sampling, tagging of fish and assessment of small lakes and borrow pits for stocking were carried out. The stocking of Polar Lake with rainbow trout was supervised. A preliminary creel census on the arctic char sport fishery on Victoria Island and an extensive creel census and biological investigation of the sport fishery for anadromous arctic char were undertaken at Koluktoo Bay, Baffin Island.

Subsistence fishery investigations centered around Great Slave Lake. Liaison with the department of Renewable Resources (GNWT) continued on a program of wildlife resource use assessment. Biological samples of arctic char from the Salmon River (Pond Inlet) were secured as part of an evaluation of the subsistence fishery this river supports.

Marine mammal work was limited to monitoring the walrus hunt in Foxe Basin, in cooperation with the Department of Renewable Resources (GNWT) and the Igloodik Hunters and Trappers Association. Supervision was provided for the live capture of three female beluga whales at Churchill by Naval Oceans System Center and the tagging and movement studies on bowhead whales in the Beaufort Sea (both U.S. Government). The negotiation continued of marine mammal quotas with numerous hunters and trappers associations. A total of 48 scientific permits were processed (under Section 4 of the Fisheries Act) for studies on fish and marine mammals in the Northwest Territories.

The research program on arctic char being carried out at Nauyuk Lake on the Kent Peninsula will come to a close this year. The data from this study are being assembled for publication in bulletin form and should be available by mid-1982. The experimental cropping program carried out on four lakes 40 km north of Yellowknife (centered on Chitty Lake) is continuing in a monitoring phase. These lakes were experimentally cropped in 1973 and 1974, primarily for lake whitefish, and are providing valuable information on the recovery mechanisms of exploited fish populations.

Plans for 1981-1982

Monitoring of the commercial fisheries on Great Slave Lake, Victoria Island, and the Keewatin coast will continue, as well as stock assessment studies on Great Slave Lake and Wellington Bay. The experimental weir fishery at the Jayco River will be concluded and a study of the feasibility of selective trap netting for whitefish in the east arm of Great Slave Lake will be initiated. Preliminary field work will also begin to assess fish stocks in the Mackenzie Delta-Beaufort Sea area.

Inland sport fisheries will be monitored in the Yellowknife and Hay River areas and in the districts of Keewatin and Mackenzie. Sport fishing potential will be examined along the Dempster Highway. Sport fisheries for arctic char on Victoria Island, the Keewatin coast and Ellesmere Island (Lake Hazen) will be investigated.

The monitoring of subsistence fishing will continue on Great Slave Lake. The subsistence fishery for arctic char in the Coppermine River will be examined and collection of harvest statistics from other subsistence fisheries will continue.

A number of marine mammal studies are planned. These include a study of walrus in Foxe Basin, the continuation of a study of Inuit utilization of beluga whales in the Mackenzie Delta and Cumberland Sound areas and narwhal near Arctic Bay and Pond Inlet.

Monitoring of the experimental cropping of lakes north of Yellowknife (Chitty Lake area) will continue for an additional two to three years until the populations have sufficiently stabilized.

Fish Habitat Management

Review 1980-81

Personnel from the Resource Impact Division completed the third year of study of the fisheries resources of the outer Mackenzie Delta/Beaufort Sea area. Studies concentrated on the use of major delta channels by fish, and on the fisheries resources of Tuktoyaktuk Harbour and coastal areas from Tuktoyaktuk westward to Richards Island. Division biological staff participated in the monitoring of dredging operations at McKinley Bay and in Tuktoyaktuk Harbour.

A cooperative DIAND/DFO monitoring program was undertaken of metal levels in marine biota in the vicinity of the Nanisivik Mine on Strathcona Sound, Baffin Island.

A cooperative DIAND/DFO three-year study was completed on the effects of highway construction on fish habitat and fish passage for the Liard Highway. A three-year cooperative DIAND/DFO study was completed on the Slave River Delta. It investigated the significance of fish resources and the potential for disturbance by changes in water quality and quantity.

Personnel under contract to the Resource Impact Division (and funded by DOE/DIAND) undertook arctic land use mapping surveys of the watersheds of northern Baffin and Devon Islands. Maps were prepared and a report describing survey techniques, characteristics of the watersheds and detailed catch information was issued.

The division participated in the review of several major industrial projects planned for the region. These included the Arctic Pilot Project (EARP), the Norman Wells Pipeline (EARP and NEB), and development of the hydro-electric potential of the Slave River. The division also played a role in the development of the draft Lancaster Sound green paper.

The Saqvaquac research station was manned continuously by scientific personnel from the Arctic Fish Habitat Research Division during 1980-81. Nutrient enrichment of selected lakes continued to determine if arctic systems respond to increased loadings of nitrogen and phosphorus in the same manner as do more temperate systems. The studies included: nutrient budgets, primary productivity, benthos, zooplankton, and fish.

Plans for 1981-82

Studies of the fisheries resources of Tuktoyaktuk Harbour and the freshwater lake systems draining into the harbour and the migration and spawning of anadromous species in the Mackenzie Delta area will be included in the Beaufort Sea/Mackenzie Delta project. Monitoring studies to determine baseline concentrations of hydrocarbons and heavy metals in marine biota of the Beaufort Sea will be initiated. The compilation of a series of habitat sensitivity/vulnerability/resource utilization maps will be initiated.

In cooperation with DIAND, monitoring the impact of the Inisvick Mine on Strathcona Sound, Baffin Island, will be continued and a monitoring study at the new Arvik Mine of the Cornwallis Island will commence.

The Resource Impact Division will perform studies of team crossings along the Liard Highway to gain additional information on stream hydrology and culvert design.

Arctic Land Use mapping surveys of the watersheds of Victoria, King William and Prince of Wales islands will be undertaken.

The division will participate in the public hearings for the Lancaster Sound green paper; the review of the environmental impact assessment of the Beaufort Sea oil and gas production and transportation project and the review of the Slave River and Liard River hydro-electric developments.

Studies on the effects of nutrients upon arctic char production will be continued at the Saqvaquac research station and a project may be initiated to study the fate and effects of radionuclides resulting from uranium mining operations.

Industry Services

Review 1980-81

The monitoring of certified processing plants ensured that instruction and operating requirements were maintained. Advice and guidance was given to processing, packing plants, transportation firms and primary procedures.

Routine end-of-line sampling for bacteriological analysis to determine product and operational standards was continued. Product sampling for heavy metal determination was an ongoing program as in excess of 4 300 samples were submitted for analysis and approximately 7 300 analyses were conducted.

The Fishing Vessel Insurance Plan promoted coverage affordable by industry. A total of 310 vessels were insured, and 9 transactions were completed under the Fishing Vessel Insurance Program.

A feasibility study of roe harvesting was initiated in the Mackenzie Delta area, with Pacific herring the principal species. The harvesting of arctic char by a weir fishing method was conducted on Victoria Island, as was fish harvesting with a mechanized unit in Great Slave Lake.

Plans for 1981-82

The branch's mandate within the regulatory sphere will be an ongoing responsibility. Inspection of fish products, processing plants, vessels and transportation conveyances will receive the branch's full attention. Field activities will be implemented in the North to ensure that goals and objectives of a major quality improvement initiative by the department will be met.

Continued work on several winter fishing units is planned. The Automated Winter Fishing Unit has undergone much modification and will again be tested. A sonar scanner is being tested to assist in locating under-ice fish stocks. Following design and fabrication in 1980-81, a portable blast freezer for use in remote fish processing plants is being tested.

Thorough coverage under the Fishing Vessel Insurance Plan will continue to be a priority, with special emphasis in the more remote areas, and in particular the Baffin.

A tripartite steering committee is organizing the study of the resource potential and marketability of several fish species in the Mackenzie Delta/Beaufort Sea. A trap net operation is planned for the east arm of Great Slave Lake. If successful, this may allow for commercial use of whitefish stocks in restricted areas. It could also improve the quality of all species taken.

The use of species by-products and under-utilized species is being developed for the G.S.L. Advice and guidance is being provided to the Hudson Bay char fishery regarding use of the freezer-transport vessels in conjunction with the land-based processing operations. Further product evaluation in conjunction with the use of the weir fishing system is planned for Victoria Island and the Back River system.

Liaison with industry and associated agencies such as the Department of Economic Development, Government of the Northwest Territories, will continue.

Ocean Science and Surveys (OSS)

Oceanography

Oceanographic investigations in the arctic relate directly to legislative responsibilities in accordance with the Arctic Waters Pollution Prevention Act and Ocean Dumping Control Act regulations. This includes the major responsibility for determining physical oceanographic conditions in relation to drilling permits in the arctic.

OSS provides oceanographic information and advice to agencies such as DIAND, EMR and DOE concerning the regulatory process, the review of industry proposals and related environmental studies. It participates in the conduct and/or management of government/industry marine environmental programs.

Atlantic Region OSS (Bedford Institute of Oceanography), Dartmouth, Nova Scotia

Review 1980-81

The problem of oceanic heat loss through open-water areas in sea ice during winter is being investigated through a joint OSS Atlantic/OSS Pacific/Atmospheric Environment Service study in an arctic polynya. A successful field experiment was carried out in March-April, 1980, at Dundas Island, NWT. The OSS Atlantic group measured turbulence and sensible heat flux in the air surface layer downwind of the polynya. The OSS Pacific group measured currents, air and water temperatures, and rates of freezing. The AES group measured winds and temperature profiles in the air.

A study is being undertaken of the surface-layer heat budget at Ocean Weather Ship *Bravo* in the Labrador Sea. Preliminary results show that changes in the heat content of the upper water column can, to a large extent, be identified as an exchange with the atmosphere.

Iceberg drift and current meter data acquired on exploration platforms on the east coast are being used by the region to develop a model of iceberg movement. In particular it will establish appropriate air and water-drag coefficients.

Progress has been made toward a better understanding of the processes leading to the renewal of Labrador Sea water. A paper was published concerning the year-to-year changes in winter conditions in the upper ocean within the Labrador Sea, and an analysis of a series of observations of the deep convective processes within the Labrador Sea was completed.

In Baffin Bay, helium-3 and tritium isotope data have been analyzed to determine the age of the bottom water to improve understanding of deep water renewal process.

Temperature, salinity, and velocity fields in and near the Labrador Current are being studied. Nutrient and velocity distributions obtained in earlier years were used to suggest a reason for the great increase in sea birds on the south Labrador coast compared to the north coast.

A study has been completed of the distributions of nutrients in the major passages of the Canadian arctic archipelago. It has shown that Arctic Ocean surface water flowing toward Baffin Bay through Lancaster and Jones Sounds has higher phosphate and silicate concentrations than that flowing through Smith Sound.

Work continued during the year on the long term monitoring project of the Labrador Current at Hamilton Bank.

Existing satellite positioning procedures are not particularly effective in polar regions for geometrical reasons and because of the deterioration in receiver performance as satellites interfere with each other. Participation continued in the Lomonosov Ridge Experiment (LOREX) to provide positioning data and to further investigate the problems. Researchers designed, constructed, and tested software and hardware for computer control of the satellite receiver to permit satellite selection, and minimize interference. Preliminary LOREX ice camp drift tracks were computed.

Stable oxygen isotope ratio techniques were successfully applied to assessments of the extent of annual sea ice turn-over in Baffin Bay.

A major marine ecology cruise was undertaken to the eastern arctic during the summer of 1980. The area of operation covered the Labrador Sea, Davis Strait, Baffin Bay, Melville Bay, Lancaster Sound, Jones Sound and Kane Basin. A variety of projects was carried out.

Plans for 1981-82

Most of the work described is on-going and will continue during 1981-82. The gradual redeployment of resources in the direction of arctic research, will continue in all disciplines, and present plans are that work in the eastern archipelago, especially Lancaster Sound, and in Baffin Bay and the Davis Strait region, will continue to expand. Oceanographic cruises to the North in 1981-82 include: CSS *Baffin* to the Labrador Shelf for the maintenance of instrument moorings on Hamilton Bank; *Pandora* (a charter vessel) to the northeast Baffin Island shelf to obtain more specific information on the location of the hydrocarbon seep and the nature of the seeping material; and CSS *Hudson* to the Norwegian/Greenland Seas for observations on which to further the understanding of the formation of the water masses that form the overflows into the deep North Atlantic Ocean. Ecological studies will be continued using ships-of-opportunity, i.e. Canadian Coast Guard ice-breakers. Also in 1981-82 the region will be participating in the FRAM 3 Experiment.

Pacific Region OSS (Institute of Ocean Sciences, Sidney, British Columbia)

Frozen Sea Research Group

The third year of field study of the Dundas Island polynya was completed during March/April. Measurements were made of mean velocity and temperature profiles in the atmosphere upstream and downstream of the polynya, together with records of the fluctuating components of velocity and temperature. Oceanographic data were obtained in the general area from four aanderaa current meters placed 12 m below the ice across Pioneer Channel to Cape Majendic. A preliminary analysis indicates a strong temperature signal in the water mass closely correlated to tidal flow. A workshop involving all three participating scientific groups is planned early in 1981.

Studies of the Beaufort Sea oceanography have involved analysis of all the CTD (conductivity — temperature — depth) profiles acquired in November, 1979, and the planning of a new field operation scheduled for March, 1981. The 1979 data have defined the baroclinic flow. Information on currents on the shelf is very limited and bottom-moored current meters are liable to be destroyed by moving ice. For this reason work was initiated using the positions and relative current measurements made by satellite-tracked buoys with current meters, moving with the ice. Elimination of higher frequencies using Kalman Filter techniques shows great promise in enabling computation of current at mid-depth.

A further oceanographic survey was carried out in Bridport Inlet to provide sufficient additional data to test a model of the circulation within the inlet, the proposed site of a liquid natural gas tanker terminal for the Arctic Pilot Project. Analysis of the data is proceeding.

Studies of the physics of deep oil well blowouts continues. The work, carried out under contract by the University of Calgary on hydrate formation in natural gas bubbles arising from such a blowout, has been completed. Further independent work under their postgraduate studies program has provided data on the rate processes controlling the formation of gas hydrates. This information has been incorporated into a mathematical model of the rising bubble.

Construction of the "salinity sucker", a device for measuring ice crystal content, supercooling, etc. in sea water, as completed. It was deployed in conjunction with the polynya field operation. Conditions in the polynya and in Wellington Channel were different from those recorded in previous years. No ice crystals were found at depth and there was no supercooling. However the entire prototype system as checked and shown to be functioning properly. A more sophisticated and less cumbersome version of this device, which should be of great use in studies of arctic surface waters, will be constructed. Work on salinity chains has continued. An excellent cell design now seems to be available and two of the commercially available chains have been ordered for field testing next year. Analytic field and laboratory experiments enabled faults in the original sonically oriented current meters (SOCMS) to be specified. A contract has been let to produce an improved version. Much effort has gone into the design of an airborne CTD system specifically engineered to fit into a Twin Otter aircraft. This system will enable CTD profiles to be taken down to a depth of 1200 m and sufficient of these data processed and plotted up in real time to enable judgment to be made before moving on to the next site.

The Practical Salinity Scale, 1978, has now been adopted by all the major international oceanographic organizations and is recommended for exclusive use in reporting all salinity data commencing January 1, 1982. This completed the contribution of the past five years. Membership in IAPSO/SCOR WG 51 on the Interpretation of CTD Data has included the production of a final draft of a paper "Design of CTD Observational Programs in Relation to Sensor Time Constants and Sampling Frequencies."

The group is involved in the Eurasian Basin Experiment, a child of SCOR WG 58 on the Arctic Ocean Heat Budget, scheduled to commence in March, 1981. Preparations are under way for a pilot project to study the feasibility of using horizontal pressure gradients in arctic channels to measure currents at depths where ice is a hazard. Planning for these future events occupied much time during 1980. The FSRG chairs the Working Group on Northwest Passage oceanography, a cooperative endeavour between industry, government and universities to study this potentially important transport route. A general advisory service is provided to government and industry by commenting on data collected by proponents and their consultants and by playing an active role in committees.

Plans for 1981-82

The field program for surveying the water properties in the Eurasian Basin of the Arctic Ocean will be conducted. Planning will be undertaken for a similar survey in the Canadian Basin. Preliminary interpretation of the polynya experiment results will be prepared and the initial field experiment on heat loss through thin ice in Bridport Inlet will be undertaken. Data interpretation will be completed for the first phase of the Beaufort Sea Winter Ice Experiment and the second stage of the field program initiated. A pilot experiment in one of the major channels of the arctic archipelago will be conducted to determine cross channel and vertical flow distribution. An intensive two-year field program is proposed to follow in the Northwest Passage. Salinity chain and sonically oriented current meter development and commercial production will continue.

Ocean Chemistry

Ongoing arctic work was undertaken by contracts. Cadmium in Churchill Harbour sediments was examined. Sea water and sediment samples were analyzed for cadmium, as well as for zinc, copper, mercury and lead. Results indicated metal levels not significantly different from natural sediments elsewhere. Previously high values over limits for dumping, which led to this study, were probably due to analytical problems of the laboratory. Advice to industries on disposal of drilling mud in the arctic was also provided.

The Beaufort Sea chemical data report was completed.

Plans for 1981-82

Provision of advice relating to drilling muds will continue. The Ocean Chemistry Division will provide the scientific authority for several Ocean Information Division contracts relating to Beaufort Sea chemical mass balance studies, including the Mackenzie River input chemical data inventory. Some continuing lead sediment flux work is anticipated.

Oceanographic Information Division

The Institute of Ocean Sciences consolidated several existing activities and initiated several new programs with the creation of an Oceanographic Information Division in August, 1980. The new division functions as a focal point for oceanographic information data and marine environmental review service for the Canadian west coast and western arctic. This includes input to EARP, numerous arctic and other committees, including the Regional Ocean Dumping Advisory Committee (RODAC), the Arctic Waters Advisory Committee (AWAC) and the DFO Arctic Offshore Development Committee (ARCOD).

During the year the division participated in a preliminary Federal Environmental Assessment and Review Office (FEARO) workshop, several AWAC, RODAC, ARCOD and joint government/industry meetings. It initiated a strategy for responding to both short term environmental impact assessment requirements and longer term research for proposed industrial production activities in the Beaufort Sea and western arctic. Joint government/industry contracts are under way to compile, appraise the quality, and archive Beaufort Sea physical and chemical oceanographic data. Several case studies were initiated to provide mass balance and flux estimates of both natural and human impacts on the Beaufort Sea environment.

In conjunction with industry, data compilation and quality assessment is being conducted for oceanographic information in both the Sverdrup Basin and Northwest Passage to provide the background for an extensive three-year oceanographic program now being planned.

To consolidate the available marine environmental information, the division completed compilation of technical records of a majority of the arctic environmental assessments, reviews and data reports from industry, government and university. The second phase of this work including computer inventory will be done during the summer, 1981.

Plans for 1981-82

Compilation and appraisal of existing physical and chemical data for the Beaufort Sea, Sverdrup Basin and Northwest Passage regions will continue. The good quality data will be archived with the Marine Environmental Data Service (MEDS) in Ottawa. Additional case studies will be performed jointly with industry and other government departments and work on biological data and data sets will be initiated, particularly relating to aspects required for the FEARC/EARP hearings.

Central Region, OSS (Canada Centre for Inland Waters) Burlington, Ontario

Review 1980-81

An oceanographic field program was carried out in February and March, 1980, to measure changes in the distribution of physical and biological parameters in the La Grande River plume (James Bay). This was done under increased discharge conditions brought about by partial operation of the La Grande hydro-electric development. The plume approximately doubled in surface area and thickness over preproject measurements carried out in 1975 and 1976. Vertical profiles of salinity, temperature and current at some 20 locations along and across the plume provided strong evidence of tidal control of mixing in the far field.

Baseline conditions of salinity, temperature and currents are being determined for Hudson/James Bay based on observations taken during the summer of 1975 and 1976. These data were also used for investigating the effects of man-made changes in freshwater input rates on Hudson Bay and James Bay. Work continued on the development of analytical techniques to distinguish between the wind-driven components of the current and the mean circulation.

With the increased likelihood of tanker traffic in the Northwest Passage, emphasis of arctic oceanographic studies was shifted from describing circulation characteristics of interconnecting channels of the archipelago to developing a long term measurement capability at a specific location. In March and April, 1981, data on under-ice current structure and water transport was collected to assess inter-seasonal and inter-annual variability. A biological study was also undertaken in conjunction with the physical oceanographic program. These studies are being coordinated with arctic studies of the Institute of Ocean Sciences and Bedford Institute of Oceanography.

An ice radar program started investigating the characteristics of sea ice. The main effort was concentrated on understanding the electrical characteristics of the ice and the physics of the radar signal for the design of remotely mounted radar systems. Development of a portable ice physics laboratory was also undertaken. The laboratory will contain all equipment necessary to undertake measurements of the physical and electrical properties of sea ice and to develop a standard procedures manual for the use of the equipment.

Information gained from these northern oceanographic studies is used in the review of applications for resource exploration permits, environmental impact statements, scientific response plans, and for assessing areas of marine sensitivity relative to potential development activities.

Plans for 1981-82

Based on the development of a long term measurement capability, continuous observations of currents, water levels and CTD's will be extended to include Prince of Wales Strait or Prince Regent Inlet.

Plans are also underway to study the physical oceanography of arctic coastal inlets to relate the effects of physical processes upon nutrient and biomass distribution.

Marine Sciences and Information Directorate, OSS

Responsibilities

The directorate participates in policy formulation for OSS arctic involvement, provides representatives to interdepartmental committees on northern development and arctic marine science, archives oceanographic data collected in the Canadian north, and disseminates northern oceanographic data. It also functions as the departmental focal point and responsibility centre for scientific and technical publications.

Review 1980-81

The directorate provided the secretariat for the Canadian Committee on Oceanography (CCO) Panel on Ice. The environmental subcommittee of Tempol on the northern part of the Arctic Pilot Project was chaired by a staff member. In addition the directorate represented OSS on such various committees as the steering committee on Lancaster Sound Regional Study, and the Interdepartmental Environmental Review Committee (IERC). The Ocean Information Services Study, undertaken by this directorate, included matters relating to the arctic.

The directorate participated in the development of the Labrador Ice Dynamics Experiment (LIDEX) and also completed a program to collect iceberg data in Lancaster Sound, using a radar installation located on Bylot Island. Direct funding was provided for the Centre for Cold Ocean Resources Engineering (C-CORE) in Newfoundland. This was part of a joint DFO-DND assessment of HF radar for sea-state measurement in the Labrador Sea and for a review of literature pertaining to sea ice and icebergs. This was through a contract with the Ocean Engineering Information Centre at Memorial University, Newfoundland.

A revision was published of the document entitled, "Bibliography on Northern Sea Ice and Related Subjects". In addition, the Scientific Information and Publications Branch published two bulletins, one special publication, one marine science report, and one volume of sailing directions.

Plans for 1981-82

The directorate will continue its role in the North. It will be involved in the planning of OSS' ocean technology program, sea ice and iceberg research, the planning of the International Polar Year celebration, the Beaufort Sea Task Force, the EARP review of Beaufort Sea Production and the implementation of the Arctic Pilot Project (northern part) recommendations.

The implementation of the Ocean Information Services study will be coordinated by the directorate. The directorate will also participate in the development of the government's five-year plan on Arctic Marine Transportation research and development. The directorate will participate in the Transportation Development Agency Working Group on studies of Ships navigating in Ice.

The directorate will continue to publish scientific evidence emanating from departmental R&D programs in the North and continue to explore, with petroleum companies and their consultants, the possibility of publishing results of their studies.

Canadian Hydrographic Service, OSS

Responsibilities

The service conducts hydrographic surveys in northern waters and produces, distributes and maintains up-to-date nautical charts, sailing directions and tide tables of northern regions.

Review 1980-81

CSS *Baffin* continued charting in the southern part of Ungava Bay in 1980, and also worked on the Labrador Coast and Davis Strait. CSS *Hudson* also participated in the latter survey.

Extremely poor ice conditions were again encountered in the eastern arctic. As a result, the high priority survey was not carried out. However, the vessel assigned to the project, CGS *Labrador*, completed the survey of Bridport Inlet, a possible site for a LNG tanker terminal.

Other high-priority survey projects were carried out by coast Guard patrol vessels in the eastern arctic. A joint gravity-bathymetric project was begun early in the year in McClintock Channel. This group operated over the ice and obtained a total of 11 383 spot soundings, providing coverage in an area which is virtually uncharted.

In the western arctic, *Pandora II* had another successful season in the Beaufort Sea. Tests on Accufix positioning were carried out and horizontal control was established in the Simpson Strait area as the preliminary part of an aerial hydrography project. A reconnaissance survey was carried out in Minto Inlet and Prince Albert Sound. Tidal programs were carried out throughout the western arctic, in McClintock Channel and the waters of the arctic archipelago. One new chart of McDougall Sound and 28 reprints of existing charts were produced. Two 1:250 000 maps in the Natural Resource series were also published. Work continued on Arctic Sailing Directions, Vol. III and on the Sailing Directions of Great Slave Lake.

Plans for 1981-82

The highest arctic priority for the CHS is the Beaufort Sea area where the possibility of deep-draught oil tanker traffic is foreseen. Surveys in the Beaufort Sea will be carried out this year by CSS *Hudson* and, dependant upon the availability of Coast Guard vessels, surveys will be done in Prince of Wales Strait and in high priority areas of the eastern arctic.

The gravity-bathymetric program will resume in McClintock Channel and Peel Sound. Surveys will again take place on the Labrador Coast and in the Koksoak River of Ungava Bay as well as in Fury and Hecla Strait. Offshore surveys will continue in Davis Strait. Tidal programs will be undertaken in Norwegian Bay, Barrow Strait and in the western arctic.

In 1981, a new edition of Vol. III Sailing Directions, Arctic Canada, will be published. In 1982 it is proposed to publish a new edition of Vol. 1, Arctic Sailing Directions. Work will continue on sailing directions for the Great Slave Lake and Mackenzie River areas. It is anticipated that in 1981, four new charts, seven new editions and three reprints will be completed. ■

Department of National Health & Welfare

NH&W

Health

Medical Services Branch

Yukon Region

Responsibilities

The branch provides and administers health care programs to all Yukon residents. The branch serves as the territorial health department and the program medical officer is chief medical officer for the territory. The branch facilitates community clinical visits by private physicians and dentists and arranges clinical services to remote areas.

Health care costs are shared between Medical Services Branch and the territorial government. The territorial government administers the health care insurance plan and contributes, according to a cost-sharing formula, to the capital and operating costs of the health care system.

The branch operates in the Yukon, a general hospital, three cottage hospitals, two nursing stations, ten health centres and four health stations.

Review 1980-81

The major programs were child and maternal health, tuberculosis control, communicable disease control, school health program (including school dental health), environmental health, mental health and health education.

Dental services were again provided in 1980 with emphasis on services to remote communities. Dentists located in Dawson City and Faro treated 415 students. From October, 1980, onwards, a full-time dental therapist was in Watson Lake.

Seventy-one cases of food poisoning were diagnosed during the Arctic Winter Games in March, 1980. Investigations by Medical Services Branch environmental health officers traced this outbreak to the manner in which food was prepared and served. Public Health officers recommended that in future all events food samples be kept for 48 hours following serving to facilitate testing. Also control measures for the storage and preparation of food will be enforced.

The branch maintained its membership in the Yukon Water Board, serving in an advisory capacity to help prevent contamination of municipal water supplies.

An increased subsidy was provided to specialists from outside the Yukon so that they could provide clinical services at Whitehorse in paediatrics, orthopedics, dermatology, ophthalmology, rheumatology, oncology, otolaryngology and internal medicine.

A health liaison officer was appointed as an employee of the Council for Yukon Indians. This officer will help upgrade the overall health status of the Indian people of Yukon.

Four candidates completed training through the Community Health Representative Program conducted in cooperation with the Yukon Vocational Training Centre.

The Environmental Health Program officers assumed responsibility for increased resource development in Yukon. Environment Health officers helped establish sanitation facilities in mining and pipeline campsites.

The Mental Health Program continued to promote community awareness and involvement in mental health and helped improve the community's ability to respond to mental health and related social problems.

Arrangements were made to have a psychiatrist make quarterly visits to communities and to provide direct services to residents and medical personnel.

Program guidelines specific to Yukon Region were developed for public health field nurses. Publication and distribution of these guidelines is expected by the end of 1981.

Maintenance and Construction

Major construction began on the Haines Junction Health Centre complex. It will provide office space for doctors, public health and dental health personnel and a community health representative. Whitehorse Hospital maintained its status as a fully-accredited hospital with renovations being completed in the operating room and dietary department.

Northwest Territories

The branch provides acute treatment care and preventive health services to the Northwest Territories. Exceptions are in Yellowknife, Hay River and Fort Smith, where acute treatment care is provided by the territorial Department of Health. The NWT department is also responsible for the Territorial Hospital Insurance Services Plan, the Territorial Health Care Plan and supplementary health programs. The NWT Government provides Medical Services Branch with support services of finance and administration.

The Branch operates four hospitals in the Northwest Territories - Frobisher Bay General, Inuvik General, and cottage hospitals at Fort Simpson and Rae-Edzo. In addition, there are 9 nursing stations, eight health centres and a number of health stations.

Dental service to communities is provided by private practitioners, government dentists and dental therapists. The therapists receive their training at the branch's School of Dental Therapy in Fort Smith.

Review 1980-81

Discussions began with the NWT government and the Inuit Tapiristat of Canada on a possible contractual arrangement under which the NWT Department of Health would operate the Frobisher Bay General Hospital. Under such arrangement the hospital would operate under a regional board of management, rather than a hospital advisory board.

The Inuvik General Hospital Advisory Board assumed increased responsibility. Inuvik General was granted accreditation status for another two years in August 1980. A programs medical officer and a finance and administration officer were hired as part of the on-going reorganization.

During 1980 three health educators, one for each of the three zones in the NWT, were hired as were two coordinators of native involvement in the health service. They will encourage native people to seek employment with Medical Services Branch and help those native employees already with the branch to upgrade their skills.

Two health studies carried out in 1980 reviewed the health services in both Keewatin and the central arctic. The central arctic report concluded that a hospital facility should be constructed in Cambridge Bay by modifying the existing nursing station. The hospital would include 10 beds, six units and be both an out-patients medical, dental program and public health unit. The results of the Keewatin review are not yet available.

The Tuberculosis and Chronic Disease function was reviewed which resulted in a restructuring of the TB unit and a rewriting of the TB Manual. During 1980 TB rates were 30 per cent below those of 1979.

The report of the Advisory Committee on Inuit and Indian Health Consultation was released. It recommended that funds be made available to native groups across Canada for consultation on health concerns. Native groups have been asked to participate in various activities of the region, including zone directors' conferences. Involvement of the native people will be encouraged as promised by the Indian Health Policy set forth by the Minister of National Health and Welfare in September, 1979.

The branch helped the NWT Department of Health establish a computerized health management system which became operational in 1980.

The Community Health Representative Program, established in 1979, began 1980-1981 with eight students. The Dental Health Program treatment services improved over the previous year. However, due to a large backlog, this service remained emergency-oriented except in those communities where services are provided by a resident dental therapist and a preventive program has been in effect. During 1980, as many as 11 therapists operated in the NWT.

The National Native Alcohol Abuse Program had four ongoing major projects in the NWT, providing coverage to 80 communities and approximately 7 000 native people.

Exposure to asbestos was of major concern to Medical Services in the NWT during 1980. The branch surveyed federal property throughout the region for risk potential with detailed inspections of Ministry of Transport buildings at Fort Smith, Yellowknife and Norman Wells. Medical Services, at the request of the territorial government, gave medical examinations to nine employees of the liquor store at Inuvik. Results in all cases were negative.

Maintenance and Construction

Frobisher Bay Hospital was renovated and upgraded. Sewage disposal improvements were carried out at Hall Beach and Arctic Bay.

Plans and specifications were completed for construction of a new station at Cape Dorset and Holman Island.

Plans and specifications have been developed for a major renovation of Fort Smith Norman station.

Maintenance on all stations in all zones of the NWT Region was carried out by Medical Services Branch.

Health Services and Promotion Branch

The Health Services and Promotion Branch encourages and assist Canadians to enhance their physical and mental well-being.

During 1980-81, the Health Promotion Directorate was involved in two national public information endeavours: "Dialogue on Drinking," the alcohol information program, and "Eat Better, Feel Great," a nutrition media campaign. Work was begun on a third, "Generation of Non-Smokers," aimed at children.

There are a number of programs resulting from the directorate's collaborative efforts in resource development. Pharmacists have been participating in the distribution of material on smoking and health. The experiences and problems of women who use alcohol and minor tranquilizers are addressed in a resource package entitled "It's Just Your Nerves." There also has been a growth in joint activities with industry, to promote health in occupational settings.

Special emphasis has been given to pregnant women who use alcohol, drugs and tobacco, in an effort to reduce the incidence of birth defects and infant mortality.

Nutrition programs have been directed towards promoting *Canada's Recommendations for Nutrition*, to encourage Canadians to reduce their consumption of fats, sugar and salt, and balance their food intake with exercise. Target groups have been the elderly, school children, those in need of weight reduction, and the food industry.

The Program Evaluation Division evaluates the effectiveness of programs of the Health Services and Promotion Branch. These include Health Resources, Health Promotion, Health Services and Extramural Research.

Extramural Research Programs

In 1980-81, the Extramural Research Programs Directorate provided \$9 997 000 for health research and related scientific activities in Canada through the National Health Research and Development Program.

Among the 225 projects supported during the year were investigations related to the promotion of healthy lifestyles and behavior patterns, the organization and accessibility of health and medical care, and the usefulness of various treatments and interventions. Also supported were studies on the development of strategies to contain infectious diseases and the application of new technology.

The program supported research on the safety and quality of foods and pharmaceutical products and on the identification of chemical, physical and biological hazards in the home, workplace and community. Investigations relating to special health interests of the department, such as the needs and problems of the socially or physically disadvantaged, received special consideration.

The Health Services Directorate provided health consultation and program and financial support to provinces, national voluntary associations, international organizations, professional associations, hospitals, health units, universities and various interest groups.

The Task Force on Suicide was constituted and convened auxiliary research activity was contracted and completed and a two-year timetable of activity was set. Symposia on children's mental health and on research programs and needs were held, resulting in clarification of priorities and functions. They contributed to the work of the mental health research group and the Task Force on Preventive Strategies in Children's Mental Health.

Family Planning grants totalling \$1 099 000 were awarded. Three grants went to national voluntary agencies and eight to provincial and territorial governments for service development. As well, three demonstration projects, two fellowships, two research projects and one training session were funded and supported by consultative visits.

The Health Resources Directorate administered the Hospital Insurance and Diagnostic Services Act, the Medical Care Act, and the Health Resources Fund Act. It made payments to the provinces for insured hospital and medical care services and certain extended health care services as provided under the Federal-Provincial Fiscal Arrangements and Established Programs Financing Act, 1977.

Health Protection Branch

Through the Health Protection Branch, the department produces an integrated program to protect the public from unsafe foods, drugs, cosmetics, medical and radiation emitting devices, harmful microbial agents, technical and social environments, environmental pollutants and contaminants of all kinds. It enforces the Food and Drugs Act and Regulations, the Narcotic Control Act and Regulations, and the Radiation Emitting Devices Act and Regulations.

An Environmental Health Directorate carries out studies on the adverse effects on human health of the chemical and physical environment. With the Department of Consumer and Corporate Affairs, the directorate jointly administers the Hazardous Products Act and with the Department of Environment the Environmental Contaminants Act.

A Laboratory Centre for Disease Control Directorate provides national microbiological reference services and develops improved laboratory diagnostic procedures and other measures to combat communicable disease agents.

Review 1980-81

The federal-provincial advisory committees on environmental and occupational health are concerned with health issues in the North. In particular, the committees focus on the technical aspects regarding housing, sanitation and water systems. Discussions on these matters continued throughout the year.

The Laboratory Centre for Disease Control continued to provide a variety of microbiological laboratory national reference services. Epidemiological surveillance activities on communicable and non-communicable diseases were continued.

Social Services

Social Service Programs Branch

Responsibilities

The Canada Assistance Plan, enacted in 1966, contributes 50 per cent of costs of provincial, territorial and municipal public assistance and welfare services expenditures. The plan helps provide adequate assistance to persons in need and encourages development and extension of welfare services to prevent and remove poverty, child neglect and dependence on public assistance. In addition to the cost-sharing arrangements, the Canada Assistance Plan makes consultant services available to the provinces and territories on income support, day care, child welfare, institutional care and community development.

Review 1980-81

The total contribution under the plan was estimated at \$3 570 000 for the NWT and \$468 000 for the YT.

Canada and the Government of the Yukon Territory share the costs of care and after-care services to young offenders committed under the Juvenile Delinquents Act. The cost-sharing agreement, signed in March, 1977, was renewed.

The Vocational Rehabilitation of Disabled Persons (VRDP) program, was discussed and interpreted. The program funded by the federal, Yukon and NWT governments, provides vocational rehabilitation to persons unable to work because of physical or mental disability. Rehabilitation coordinators of both territories participated in national and regional meetings.

Income Security Programs Branch

Family Allowances

Family Allowances, paid monthly on behalf of children under 13 who are maintained by a parent or guardian resident in Canada and subject to Canadian income tax, were paid on behalf of 7 314 children in the Yukon in 1980 and 19 243 children in the Northwest Territories.

For the calendar year 1980 the rate payable in the Yukon and Northwest Territories was the federal rate of \$21.80 per month.

A new program known as the Child Tax Credit started in January, 1979. This program, administered through the income tax system, provides an annual benefit of up to \$218 on behalf of each eligible child.

Old Age Security

The Old Age Security is a non-contributory program providing a monthly benefit to all persons 65 years of age and over who can satisfy certain basic residence requirements and who are Canadian citizens or legal residents of Canada.

The Act also provides a Guaranteed Income Supplement to pensioners resident in Canada who have a limited income. The Spouse's Allowance is also an income-tested benefit payable to the spouse of an Old Age Security pensioner. In January, 1981, the basic pension was \$202.14.

The maximum monthly supplement was \$202.94 for a single or married pensioner whose spouse was not receiving the pension or a Spouse's Allowance and \$156.47 each for a married couple.

In December, 1980, there were 687 persons receiving the Old Age Pension in the Yukon. Of this number, 363, or 52.8 per cent, received a supplement. In the Northwest Territories there were 1207 Old Age Security pensioners, with 962 or 79.7 per cent receiving a supplement. There were 14 recipients of Spouse's Allowance in the Yukon and 32 in the Northwest Territories.

The Family Allowance and Old Age Security Programs are administered in the Yukon and Northwest Territories from the Regional Income Security Programs Office, Edmonton, Alberta.

Canada Pension Plan

The Canada Pension Plan, in existence since January 1, 1966, is a compulsory, contributory, earnings-related plan which, together with the Quebec Pension Plan, covers virtually all employed persons between the ages of 18 and 70 in Canada. The maximum retirement pension in 1981 is \$268.64 per month.

Disability pension is payable to contributors suffering from severe or prolonged mental or physical disability. It consists of a fixed monthly amount of \$62.91 in 1981 plus 75 per cent of the contributor's retirement pension. The maximum monthly disability pension in 1981 is \$268.64

Beneficiaries by the type of benefit and by territory

Territory	December, 1980		Survivors			
	Retirement Pensions	Disability Pensions	Children's Benefits	Death Benefits	Spouse's Pension	Orphan's Benefits
Yukon	338	40	25	3	178	161
NWT	205	12	20	3	131	277

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Department of Indian Affairs & Northern Development

DIAND

Northern Policy and Program Review Branch

Responsibilities

The Northern Policy and Program Review Branch coordinates and advises on policies related to the department's responsibilities in the North. It also collects, interprets and publishes information on the annual northern expenditure plans of all federal and territorial government departments and agencies related to Canada's North.

Review 1980-81

The branch was the focal point for initiation and development of the government's new policy and expenditure management system through its first full cycle.

The branch published the Annual Northern Expenditure Plan, a comprehensive overview of northern-related expenditures of the federal and territorial governments. In view of the anticipated construction of the Alaska Highway Pipeline, information on planned capital expenditures on government construction projects in Yukon was compiled and reviewed by the Federal Interdepartmental Coordinating Committee (FICC) in Yukon. In addition, preliminary evaluation assessments were carried out of selected areas in the Northern Affairs Program.

Plans for 1981-82

The 1981-82 Annual Northern Expenditure Plan will be prepared and the information on planned capital expenditures related to government construction projects in Yukon will be updated. Responsibility for program evaluation will be transferred to the Corporate Policy area to centralize this function within the department.

(ACND) Secretariat Division

The Secretariat continued to provide staff support to the federal inter-departmental coordinating and consultative mechanism established by Cabinet in 1948.

Meetings of the committees comprising the ACND structure considered problems and program development in northern science, transportation, communications and industrial benefits to Canada from major natural resource development.

The publication "Guide for Expeditions to the Canadian Arctic Islands" was printed and released in both official languages.

The Secretariat produced the 27th edition of the annual report "Government Activities in the North" in both official languages. This document describes the activities of federal departments, agencies and the territorial governments in the North.

The Toponymic Unit continued coordination for the naming of geographic features in the North and on Indian Reserves, prior to acceptance and approval by the Minister.

Northern Coordination & Social Development

Territorial Relations Division

The division monitored the progress made towards self-government in the North.

In Yukon, following the introduction of de facto responsible government in the fall, 1979, control and administration of the territorial government has been a fully-elected cabinet functioning with most of the powers of provincial cabinets. The commissioner's role is similar to that of a Lieutenant Governor of the provinces. The Legislative Council's Special Committee on Constitutional Development continued its work "to meet with individuals, groups and organizations for the purpose of discussing constitutional development in Yukon".

In the Northwest Territories, the elected membership on the Executive Committee increased by two, from five to seven, for a total of nine members including the commissioner and his deputy as appointed by the Governor-in-Council. The Executive Committee advises the commissioner in the administration of the territories and each member is assigned responsibility for one or more departments of the territorial government. In line with the current trend towards self-government, the commissioner has now assigned most of the important portfolios to elected members.

The Prime Minister's Special Representative for Constitutional Development in the Northwest Territories, the Hon. C. Drury, submitted his report March, 1980. It generated a long period of debates as it covered two issues of great sensitivity in the territories: division and native claims settlement. The report centered around the concept of devolution of federal and territorial government responsibilities. Mr. Drury recommended the early settlement of native claims and the thorough examination of the question of division by the local population. In November, 1980, the NWT Legislative Assembly accepted the report of its Special Committee on Unity and approved in principle the concept of dividing the NWT into at least two separate territories. The report called for a territorial plebiscite to be held within two years.

As a result of a Cabinet decision in the summer of 1980, the Minister of DIAND undertook preparation of a comprehensive paper dealing with the government's policy for Canada's North. The conclusions of that review will have a bearing on future constitutional change in both territories. The review should be completed during 1981.

Review 1980-81

Plans were completed to transfer responsibility for road maintenance in the Northwest Territories to the territorial government effective April 1, 1981. Assistance was made available to the Government of the Northwest Territories in the form of special grants to cover escalating costs of fuel and utilities during fiscal years 1979-80 and 1980-81. Effective 1981-82 such assistance will form part of the operating grant payable to the territorial government.

Plans for 1981-82

The division coordinated negotiations for Federal-Territorial Financial Agreements covering fiscal year 1981-82 for both territories.

Financial Agreements — 1981-82

YT	(\$ 000)
Operating Grant	\$ 39 913
Capital Grant	22 233
Loans	5 000

NWT

Operating Grant	199 859
Capital Grant	73 695
Loans	4 000

Additional financial assistance outside agreements

YT

Hospital care of Indians and Inuit	800
Medical care of Indians and Inuit	200
Low income rental purchase housing	208

NWT

Hospital care of Indians and Inuit	6 517
Medical care of Indians and Inuit	900
Low income rental purchase housing	—

Social and Cultural Development Division

Responsibilities

The Social and Cultural Development Division administers programs which support social and cultural development of Inuit and other northern native people. The division has five sections: Native Liaison, Inuit Art, Cultural and Linguistics, Vocational Training and Loan Fund and Administration.

The Native Liaison Section facilitates consultation and liaison between the government and northern native people. It arranges funding for groups to research, develop and negotiate their land claims, and enables consultation with native groups on northern development concerns and interests. In addition, it coordinates Northern Program positions on issues raised in the claims negotiation process.

The Inuit Art Section is the central agency dealing with all aspects of Inuit art. It provides professional support to art-producing cooperatives. In particular, market development support goes to the Canadian Arctic Producers Cooperative and La Fédération des Coopératives du Nouveau Québec, the central marketing agencies for northern art and crafts.

It conducts research and prepares publications, provides information to institutions and the public and carries out a national and international exhibition and lecture program.

The Canadian Eskimo Arts Council, appointed by the Minister, provides advice on the orderly development of Inuit arts and crafts. Artists are advised and assisted with the protection of their copyright.

The Cultural and Linguistics Section provides translation services in a variety of language dialects and orthographies, publishes a quarterly magazine, *Inuktitut*, and administers a grants program which enables Inuit to participate in a wide range of cultural activities. The section sponsors projects involving the support of Inuit film making, communications, literature and language development. The department's funding and liaison activities in connection with the Inuit Cultural/Education Centres in the NWT and Labrador are conducted through the section.

The Vocational Training Section provides counselling services to northern native students in southern Canada and operates Inuit House in Ottawa. It administers an on-the-job training program to increase northern native employment, provides apprenticeship training to northern native people and arranges special training programs.

The Loan Fund and Administration Section is responsible for a variety of special services along with policy and coordination of the Eskimo Loan Fund and associated financial assistance programs. The five-year Cooperatives' Development Program is administered by this section.

Review 1980-81

Although no new claims were submitted during the year, negotiations were renewed on several fronts.

The Dene nation and the Metis Association of the NWT called for active negotiation. The appointment of a federal chief negotiator is anticipated in the new year.

The final settlement of the Committee for Original Peoples Entitlement (COPE) claim in the western arctic region was again delayed as negotiations broke off in early January.

Inuit Tapirisat of Canada commenced its negotiation in October, 1980.

The Labrador Inuit Association carried on development of its land claim position. The provincial government agreed to enter into negotiations but only after consultation with the federal team.

Consultation assistance was requested on Norman Wells, Beaufort Sea, Lancaster Sound, and other proposals involving hearings through EARP, NEB and other public forums. The division embarked on a number of projects designed to provide accurate information to all concerned, on issues relating to the conservation of barren-ground caribou, particularly the Kaminuriak and Beverly herds. It is expected that the ensuing exchanges will lead to improved conservation measures.

At the request of the Canadian Eskimo Arts Council, a printmaking workshop, attended by 15 Inuit printmakers, was organized at York University, Toronto. Assistance was given La Fédération des Coopératives du Nouveau-Québec to mount an exhibition *Things Made by Inuit* for use in arctic Quebec. Canadian Arctic Producers and West Baffin Eskimo Cooperative were helped to expand marketing in the maritime provinces through a program of information and exhibition. The Research and Documentation Centre of the Inuit Art Section was developed extensively with photographic and printed documentation.

Continued support was given to Inuit film making activities and the Anik B communications projects of Inuit Tapirisat of Canada (ITC) and Taqramiut Nipingat Inc. (TNI) of northern Quebec.

Three issues of *Inuktitut* magazine were published including a special issue commemorating the magazine's 20 years.

Work continued on the revision of an Inuktitut dictionary. During the year, the department in cooperation with the Inuit Cultural Institute (ICI), sponsored workshops on Inuktitut terminology for Inuit translators.

More than 50 northern native people completed on-the-job training and obtained employment. Two northern apprentices graduated as carpentry journeymen. There were 15 Inuit placed in employment with DND at Alert, NWT. In a joint venture with Transport Canada, 12 Inuit served on Canadian Coast Guard icebreakers in the arctic during the summer.

Counselling services were provided to more than 185 native people in southern Canada during the year. Inuit House continued in operation serving as a social and cultural centre for Inuit in Ottawa.

During the year 36 loans, valued in excess of \$650 000, were made to Inuit and Inuit-controlled business organizations. In addition, \$1.9 million was paid in economic development contributions. The five-year cooperative development program entered its fourth year. The program seeks to establish financial stability and upgraded management skills for northern cooperatives. The NWT and northern Quebec cooperatives did \$27 million in business and paid out \$9.1 million to northerners in wages and other payments.

Plans for 1981-82

As a result of increased activity in northern resource development and environmental and social impact assessments and hearings, the division will continue its consultation funding to northern native associations.

At the same time, it will continue to facilitate loan agreements for research and consult on concerns in social and economic development in the North.

The Inuit Art Section's information base will be expanded through research, audio-visual material and publications. A catalogue of the departmental collection of Inuit art will be prepared. Liaison activities with exhibiting institutions in Canada and abroad will be undertaken to increase awareness of Inuit art.



This house for DIAND staff was constructed at Frobisher Bay by Northern Affairs apprentices during the fall, 1980.

Priority will be given to the continued support of Inuit television and broadcasting activities following the conclusion of the Inuit Anik B project in May, 1981.

Specialized Inuktitut dictionaries for Inuit translators will continue to be developed. The revision of a major Inuktitut-English dictionary will be completed, in cooperation with the Government of the Northwest Territories and Inuit cultural associations. Projects supporting Inuit literature and music will continue. Special issues of *Inuktitut* magazine will be published on Inuit education and on conservation and use of arctic wildlife.

An evaluation of the air mechanics and air pilot training courses will be carried out. Inuit House will be reviewed to determine the appropriate method for its continued operation. Apprentices will construct a house for DIAND staff in Baker Lake, NWT.

The Cooperatives Development Program will undergo evaluation to determine its effectiveness.

Northern Social Research Division

Responsibilities

The division plans, conducts and sponsors research, principally in the social sciences; supports the training of northern scientists by Canadian universities through the Northern Scientific Training Grants Program; supports the Association of Canadian Universities for Northern Studies; develops and maintains a northern social research information and documentation service; provides the department and the territorial governments with analysis of social, economic and technological developments in the foreign North; administers a program for scientific resource centres in the North to encourage expansion of scientific work and the development of a northern cadre of scientific expertise.

Review 1980-81

Research was related mainly to problems of social change for native people in the North. A large portion of this work was done by university scientists and others under contract. Division officers supervised and coordinated programs in northern demography, renewable resources, the evolution of self-government in the foreign North, Athapaskan language, social, economic and technological aspects of offshore drilling activities in the foreign North.

The division was instrumental in obtaining significant grants from private foundations for the Université de Montréal and the University of Saskatchewan to conduct a major research program on northern populations.

Gathering and disseminating scientific, technical and other information about the Canadian and foreign North was another activity performed during the year. The Information and Documentation Service continued to inventory socio-economic research by federal and territorial governments and universities. The Documentation Service, with other groups interested in northern documentation, worked in concert with the Association of Canadian Universities for Northern Studies to develop a permanent Bibliography on Northern Canada.

Core-funding was provided to the Association of Canadian Universities for Northern Studies, which held its third annual meeting at Trent University, Peterborough, Ontario. At the request of Treasury Board, an evaluation of the effectiveness of the Association was completed.

Last year was the 19th year of the Northern Scientific Training Grants Program. Grants totalling \$425 000 were awarded to provide northern experience to scientists in training.

Grants were made to: (University in brackets) Committee on Arctic and Alpine Research, (British Columbia); Boreal Institute for Northern Studies, (Alberta); Committee on Northern Studies, (Manitoba); Institute for Northern Studies, (Saskatchewan); Committee for Arctic and Sub-Arctic Research, (Toronto); Northern Research Group, (Ottawa); Northern Research Committee, (Western Ontario); Presidential Committee on Northern Studies, (McMaster); Centre for Northern Studies and Research, (McGill); Centre for Research in Labrador, (Memorial); Committee on Northern Studies, (York); Groupe de recherches nordiques, (Montréal); Centre de recherches sur le Moyen-Nord, (Québec à Chicoutimi); Centre d'Etudes nordiques, (Laval); Centre d'Ingénierie nordique, (Ecole Polytechnique, Université de Montréal); Committee on Northern Studies, (Waterloo); Committee on Northern and Native Studies, (Carleton); Northern Studies Group, (Calgary); Northern Studies Committee, (Trent); Northern Studies Group, (Windsor).

The division operated the Northern Scientific Resource Centre at Inuvik. This laboratory, opened in 1963, provides general laboratory and other facilities for research in a variety of disciplines in the Mackenzie Delta region. Another Northern Scientific Resource Centre, at Igloolik, supports research in the eastern arctic.

A study, initiated to find ways to better coordinate research activities of federal departments, the territorial government, and private agencies, found a requirement for an institutional framework which would reflect northern concerns and permit a greater northern input and benefit. A review of scientific facilities at Inuvik, Igloolik, Rankin Inlet, Frobisher Bay, Yellowknife, Pond Inlet and Churchill was completed. These facilities are being considered for inclusion under the umbrella of the proposed Framework for Science and Research in the North.

Plans for 1981-82

The division will continue to administer the programs in support of northern science and research. It will ensure that its science support role is emphasized through the Northern Training Grants Program, the Northern Documentation Service and the Northern Resource Centres. Officers of the Circumpolar Affairs Unit will monitor changes in the foreign North. The division, in conjunction with various other groups, expects to complete the development plan for the proposed Framework for Science and Research in the North.

The division will sponsor and carry out research programs, mainly on social questions in northern Canada, the impact of large resource developments on the people of the North, and the social implications of renewable resource development. The Athapaskan Language Project and studies on alcohol and corrections will be pursued in collaboration with the Government of the Northwest Territories and the Government of Yukon. A major research program in northern demography will be launched in collaboration with the Université de Montréal and University of Saskatchewan.

The Circumpolar Unit will collect, review and update information on the foreign North. A series of maps showing the economic, social and technical development of these countries will be completed.

Northern Environment

Land Management Division

Responsibilities

The division administers surface rights and environmental regulations for 3.9 million km² of northern Crown lands.

Review 1980-81

An initiative was taken in collaboration with territorial governments and other affected federal departments, to define a Northern Land Use Planning Policy. This work was highlighted by a special workshop on land use planning, attended by experts from academia and several provinces.

Subsisting land leases, agreements of sale and reservations exceeded 2 350 in Yukon and 1 550 in the NWT.

More than 430 applications were received for land use permits for exploration and development related activities in Yukon and Northwest Territories. The potential environmental impact was studied in each case and, following consultation with Environment Canada and communities which might be affected, operating conditions were prepared. Permits were issued for such operations as road construction, mineral exploration, petroleum exploration, campsites, quarrying, land clearing and artificial island construction.

The moratorium on transferring federal lands to the Yukon government because of Yukon Indian land claims negotiations ended February 6, 1981, with the Minister's offer to transfer responsibility for recreational lands consisting of 36 campgrounds and approximately 900 cottage lots in subdivision groups of six lots or more. Some additional 80 to 90 cottage lots in groupings of five or less are proposed for transfer. Included in the 900 lots are 110 new lots in the Little Teslin and Taku subdivisions which were developed during 1979 and 1980 but not released to the public because of land claims negotiations. Cottage subdivisions transferred consist of the lots, associated roads, and public use areas, adjoining waterfront and a small surrounding buffer area. The Yukon government would assume full responsibility for future construction and marketing of cottage lots under territorial disposition policies. Future planning for recreational lands would, however, be conducted jointly by both levels of government.

In the NWT cottage lots continued to be developed to meet demand. Fifty-five lots were marketed in 1980.

Work continued on amendments to the Territorial Lands Regulations for legislative action in 1981-82. On January 12, 1981, a bill was introduced in the House proposing repeal of the Land Titles Act in both territories and the transfer of responsibility for land titles to the territorial governments when they can enact land titles ordinances to replace the Land Titles Act. Also, certain powers of the Minister, DIAND, were transferred to the Minister, Northern Pipeline Agency, to enable the latter to fulfill his mandate with respect to the Alaska Highway Natural Gas Pipeline. Division officers participated in the preparation of an agreement containing the terms and conditions for the grant of easement on Crown lands required for construction, operation and maintenance of the pipeline. Division personnel continued to provide special information to the comprehensive claims negotiations north of 60°.

Public meetings into the proposed Polar Bear Pass Ecological Site were held in Ottawa and Yellowknife in September, 1980, and at Resolute in January, 1981.

A resource inventory and analysis program, under the Canada-Yukon General Development Agreement signed in 1977, was implemented during the summer, 1979. This was the second year of a four-year study to expand the resource information base of the YT. Total cost of the program is estimated at \$2.4 million.

The division provided support throughout the year to negotiations and attended sessions on the CYI claim. The division also undertook preparatory work for and attended negotiation sessions of both the COPE and ITC claims.

Plans for 1981-82

Cabinet direction will be sought in regard to a policy on Northern Land Use Planning.

The first transfers of recreational subdivision lots and campgrounds to the Yukon government will commence in 1981-82 and work will continue jointly with the Yukon government to identify lands suitable for future recreational development and disposition under Yukon government auspices. In the NWT, work will continue toward cottage subdivision development.

During 1981, it is expected that amendments will be legislated to the Territorial Lands Regulations and Territorial Quarrying Regulations. The existing regulations were legislated in 1960 and 1957, respectively, and updated regulations are needed to meeting changing circumstances.

It is expected that certain federal lands required for the Alaska Highway Natural Gas Pipeline will be transferred to the Northern Pipeline Agency in 1981 for a grant of easement to Foothills Pipeline Company. When this occurs, the current freeze on federal lands within most of the 8 km wide pipeline corridor, now exempt from disposition, will be lifted. In the NWT, the division will prepare documentation for the grant of pipeline right-of-way to Interprovincial Limited, should the Government of Canada approve construction of an oil pipeline from Norman Wells.

Draft management proposals on the Polar Bear Pass Ecological Site will be prepared and circulated.

Interdisciplinary resource inventory studies under the GDA will be continued. Also, the need for a data storage and retrieval system will be investigated to determine whether an ADP system will be required.

Native claim negotiations north of 60° will accelerate with comprehensive claims of four native organizations, CYI, COPE, TC and DENE, in progress. The division will continue to provide support in this field.

In Yukon, consultation with the territorial government will occur on implementation of the recommendations of the Whitehorse North and South Land Management Planning Projects. Much of the consultation will involve planning for the release of rural residential subdivisions to meet public demand.

Water Resources Division

The division is responsible for the protection and management of the inland waters of Yukon and the NWT and arctic marine waters adjacent to the mainland and islands of the Canadian Arctic. It controls the use of land and waters for hydro power developments on federal lands south of 60°. These responsibilities are carried out under the Northern Inland Waters Act, the Arctic Waters Pollution Prevention Act (for non-shipping activities) and the Dominion Water Power Act.

Review 1980-81

The Mackenzie River Basin Study was completed, fulfilling a three-year undertaking. A study report plus nine detailed background reports should be available early next year. A second phase of the coastal zone management studies was completed which analyzed the Alaskan experience in terms of its applicability to the Canadian coast of the Beaufort Sea. An agreement for a three-year study of the water and related resources of the Yukon River Basin was signed. Full scale studies are expected to get under way during 1981-82, leading to comprehensive plans for utilization of the resources in the basin.

Environmental regulation and monitoring of drilling activities in the Beaufort Sea highlighted the division's offshore responsibilities. Four drillships carried out work at eight different locations. In addition, environmental inspections were carried out at one drillsite in southern Davis Strait. Approvals were given to Dome and Gulf for the construction of two artificial islands in the Beaufort Sea.

Applications for water use were relatively high during the year and more than 500 authorizations to use water without a licence were issued in Yukon and the NWT. Of this total, almost 300 were for placer mining in Yukon. Five licences were issued (one for hydro, one for agriculture, one for municipal and two for mining).

Plans for 1981-82

A study is planned to confirm the hydro potential of the Horton, Hornaday and Anderson Rivers in the NWT. The Yukon Basin Study will get into full swing during the year. An accelerated offshore drilling program in the Beaufort Sea is expected with four drillships in operation as well as construction on up to three artificial islands. Placer mining is expected to maintain a high level of activity necessitating increased water use authorizations and inspections. The third phase of the Coastal Zone Planning and Management Study will focus on the coast of the Beaufort Sea.

It is anticipated that initial steps will be taken to amend the Northern Inland Waters Act and the Arctic Waters Pollution Prevention Act and to formulate a new policy for managing placer mining in Yukon.

Lancaster Sound Regional Study

The Federal Environmental Assessment Review Office Panel, considering Norland Petroleum Ltd.'s application to drill in Lancaster Sound, concluded that the combination of physical characteristics, biological uniqueness and logistical problems in the Lancaster Sound demanded an ultra conservative approach to deep-sea drilling. The panel recommended that drilling be deferred until deficiencies in the Norland's application were corrected and that a much broader review be done of the present and future uses of the region to ensure maximum conservation and use of resources in the area.

DIAND acted on these recommendations and initiated a comprehensive Regional Study, with a Steering Committee and Working Group drawn from five federal departments and the Government of the NWT.

Review 1980-81

The Lancaster Sound Regional Study consists of four major phases. The first phase has been completed. It involved the collection of all relevant available environmental and socio-economic data as well as information on potential development projects and other future activities affecting the region. The data base included a Preliminary Data Atlas and five background reports.

The principal outcome of phase I was the preparation of the draft green paper summarizing current knowledge about the area. It raises major questions that would be taken into account in planning. The draft green paper was officially released by the Minister, DIAND, February 6, 1981.

Plans for 1981-82

The Lancaster Sound Regional Study is now entering its public review phase. This is intended to provide an opportunity for interested individuals and organizations to express their views, concerns and proposals.

Three forums have been arranged for these public discussions:

- community meetings in Arctic Bay, Pond Inlet, Grise Fiord and Resolute during April, 1981;

- a northern workshop in Resolute in early May, 1981;

- a southern workshop in Ottawa in late May, 1981.

Analysis of all will be incorporated into a report.

Phase three will consist of detailed analysis of the data base, including identification of a series of options for the use and management of the region. This analysis and synthesis will be incorporated into a final version of the Green Paper.

In the final phase, extensive intergovernmental and inter-departmental consultation will be undertaken to review the identified options. A memorandum to Cabinet will be prepared, which will recommend the adoption of a land (and marine) use and management regime for the area.

Forest Resources Division

Forest Fire Management

Responsibilities

Forest fire management is an integral part of northern renewable resource management. The first program provides protection to communities, timber, power transmission and communication networks, recreation areas, watersheds, erosion-prone sites and community-oriented wildlife areas.

Review 1980-81

The worst fire season in the recorded history of the North started early in both Yukon and the Northwest Territories and continued until late September under severe drought conditions.

The average fire was particularly expensive because of the heavy use of aircraft. Casual flying hours increased by over 1,000 per cent compared to 1979. Fire bombers were obtained from British Columbia for a short period, and during May and July, two groups of overhead personnel and fire fighters were loaned to the Northwest Territories. In Yukon, 150 fires burned 130 781 ha, 50 per cent of which was recorded from fires started by lightning. Rotary wing aircraft were quite scarce in western Canada which necessitated bringing them from Alaska and eastern Canada. As well, a Chinook helicopter with a 1 600 gallon fire bombing bucket was obtained from the Armed Forces.

In the Northwest Territories, 345 fires destroyed 1.2 million ha of forest land. Sixty-five per cent of the fires were started by lightning and accounted for 99.8 per cent of the burned area.

During the most critical situation in July, a request was made to all fire agencies in Canada for assistance should the situation become worse. All agencies responded positively but only Ontario, British Columbia and Alberta were asked to actually send help.

The report of the Fire Review Panel was received in April, 1980, and recommended extensive policy changes. The Minister endorsed the formal recommendations but because of the high degree of fire operational activity during 1980, it was not possible to completely implement the new policy. A larger area was protected than in 1979 however, and meetings with newly-formed Fire Councils were held in most communities. The objective of the meetings was to obtain from the residents their views on fire policy matters and on the priority they would give to areas they wanted protected. As well, an initial meeting took place regarding the formation of an NWT Fire Management Committee. The committee will be composed of users of the fire protection service and fire management experts. The objective of the committee will be to improve the protection service to the communities and resources of the North and to ensure that the fire management policy and operational guidelines are more responsive to the people.

Plans for 1981-82

The focus will be on strengthening the fire management agencies in both Yukon and the Northwest Territories with personnel and operational and capital funds. As well, talks will be held with the GNWT concerning the devolution of the fire management program to that government.

Forest Management

Responsibilities:

This program manages the forest resources of Yukon and the Northwest Territories with a view to maintaining a sustained supply of wood for the growing economy of the North, and creating suitable employment opportunities for northern residents.

Review 1980-81

While the total wood production in the Northwest Territories equalled that of the previous year, production in Yukon dropped by over 35 per cent. The decrease was due to the diminished harvesting activities of Cattermole Timber Ltd. in the Watson Lake area.

In Yukon, the total production was 90 150 m³, consisting of 22 450 m³ of sawtimber, 19 700 m³ of roundwood (posts, piling, building logs and mine props), and 48 000 m³ of fuelwood. The 20 per cent increase in the production of fuelwood was caused mainly by the high price of heating oil. The figures for the Northwest Territories are 45 700 m³ of sawtimber, 1 900 m³ of roundwood and 6 000 m³ of fuelwood, a total of 53 600 m³.

Fourteen sawmills operated in Yukon during the year and six in the Northwest Territories. The largest, Cattermole Timber Ltd. sawmill at Watson Lake, had planned considerable improvement but because of delays in securing an additional sustained supply of raw material in British Columbia, the plans were not completed.

The sampling aspect of the forest inventory work in the lower Liard Forest Management Unit in the Northwest Territories proceeded as scheduled. The office (area summary and statistical evaluation) phase of the work will commence upon arrival and installation of a data processing facility. Forest inventory work in Yukon was limited to photo-point classification leading to an area summary of the LaBiche FMU.

Considerable progress was made in planning an integrated forest inventory system for both Yukon and the Northwest Territories. Standards for reconnaissance, regional and pilot surveys were determined, scales of photography and mapping agreed upon, and forest classification guidelines established. Large-scale photography and its use for sampling purposes is to become an integral part of forest inventory work in the North.

The Pacific Forest Research Centre continued to assist Yukon forestry staff with the evaluation of regeneration surveys on cutover lands, and with the development of foresting of seed crops.

Plans for 1981-82

In the Northwest Territories, the field crews will commence forest survey work in the Trout FMU, in the vicinity of Fort Simpson, while in Yukon a start will be made on introduction of sampling from large-scale aerial photographs. Preparation guidelines and procedures dealing with all phases of forest inventory work, including data storage and processing, will be shared among forestry staffs in the regions and in Ottawa.

Northern Environmental Protection Branch

Responsibilities

The branch coordinates, develops and recommends policies, strategies, plans and regulations for environmental protection in the Yukon and NWT and in the adjacent offshore regions. It sponsors applied research to support this role.

The branch develops policies concerning environmental impact assessment of northern development and engineering, recommends northern research and serves as the link between the Northern Program and the Federal Environmental Assessment and Review Office.

Environmental Assessment Division

Review 1980-81

The division reviewed the Arctic Pilot Project Environmental Statement and the Esso-Norman Wells Environmental Statements. Interventions on behalf of the Northern Program were made before both Environmental Assessment Panels. Environmental regulatory requirements are being developed for the Esso-Norman Wells project.

The environmental studies were completed related to placer mining in the Yukon. The implications of these studies with respect to the regulation of placer mining and the need for further studies are being evaluated.

Other tasks of the division included advice and assistance in the development of Regional Environmental Review Committees, environmental review of Liard Highway design, environmental input to the Northern Roads and Airstrips Division and the Northern Pipelines Branch and advice on tributary and other environmental issues to headquarters and the regions.

Plans for 1981-82

The division will continue to plan, coordinate, and conduct research on the environmental implications and regulations of placer mining. It will review the Environmental Impact Statement of Beaufort Sea Hydrocarbon Production and in particular, the terrestrial implications of that project. It will also be involved in the review of the environmental implications of the development of the MacMillan Pass area.

Environmental Studies Division

Review 1980-81

There were 31 maps of the Land Use Information Series published covering the Keewatin from Chesterfield Inlet to MacAlpine Lake. Field work was carried out around Lancaster Sound.

Experimental and survey work on the disposal of drilling fluids was continued. Results have been published from monitoring of thermal changes at drilling sumps on Cameron Island and in the Mackenzie Delta. Samples of soil and vegetation were taken from old well sites to investigate residual toxicity where various methods of disposal had been used. The third of a series of reports was published. Proceedings of an International Government-Industry Symposium in January, 1980, were published.

Work on the development capacity of northern lake basins continued at Schefferville, northern Quebec. Recommendations arising from this work have been used for other northern projects.

Experiments using plants from Smoking Hills, Cape Bathurst, to revegetate mine wastes at several sites in Yukon and at Sudbury, Ontario, have been successful. Work to establish commercial seed viability has concluded and the project may be handed over to industry for production and application. A bibliography on reclamation and revegetation has been published. Ecological Bibliography of the arctic islands archipelago continued.

A report on the effect of seismic exploration, especially the effects of explosions on muskrats in the Mackenzie Delta, is being translated for publication. A report was completed on the degradation of crude oil in northern soils. A study was completed of the natural recovery rates for fish and wildlife habitat following disturbance by placer mining in Yukon.

Plans for 1981-82

The environmental studies of the Schefferville area lakes will be continued. The sump studies in the Mackenzie Delta and Yukon oil spill sites will be brought to a conclusion. Terrain-vehicle interaction studies will continue in the Keewatin area. New studies of radionuclides in the vegetation and sediments of the Keewatin are planned as is the development of a hydro-geologic model for uranium mine tailings. A manual of environmental guidelines is to be prepared covering mineral extraction as a first phase. Responsibility for the Land Use Information Series was transferred April 1, 1981, but the series will continue.

Offshore Environment Division

Review 1980-81

Continued implementation of the Eastern Offshore Marine Environmental Studies (EAMES) Program was a major responsibility. Comprehensive studies were completed in Northern Baffin Bay and Lancaster Sound.

The Ikaluit Laboratory in Frobisher Bay provided support to EAMES projects in addition to educational opportunities in cooperation with local schools.

The division advised on environmental monitoring programs and operating conditions for offshore hydrocarbon exploration in Davis Strait and the Beaufort Sea, and for mining developments at Nanisivik and Polaris.

The division participated in AMOP (Arctic Marine Oilspill Program) through membership in the Management Committee and financial assistance to BIOS (Baffin Island Oilspill Study).

The division continued to provide environmental advice on Petro-Canada's Arctic Pilot Project (APP), and cooperated with Danish government representatives to develop environmental studies along the Greenland coast.

Research contracts were issued to investigate the effects of oil on the thermoregulation of polar bears.

Plans for 1981-82

Review of the Environmental Impact Statement for exploratory drilling in Lancaster Sound-Northern Baffin Bay will be initiated.

Increased involvement in Beaufort Sea hydrocarbon development will occur through the Beaufort Sea Task Force.

Continued assistance will be provided on route selection and other environmental issues associated with the APP.

The division will support BIOS in cooperation with AMOP.

Northern Non-Renewable Resources Branch

Oil and Gas Divisions

Responsibilities

The Oil and Gas Land Division manages the government's proprietary interest in oil and gas. It handles sales of oil and gas rights, issues permits and leases, maintains a registry of oil and gas rights, and monitors royalty and other revenue functions directly resulting from oil and gas operations.

The Oil and Gas Resources Evaluation Division conducts economic and geological appraisals of individual parcels and evaluates oil and gas potential in the North. It assesses exploratory programs, receives and maintains technical data from these programs, maintains a library of exploration reports for use by the public, and processes geoscience data to provide information on potential reserves and land values.

The Oil and Gas Engineering Division is responsible for departmental safety control of drilling and production processes and of gathering, storing and transmission of hydrocarbons from the territories and adjacent offshore areas. The division ensures that maximum economic recovery of oil and gas is achieved, that all underground fluids not produced are confined to the strata in which they were found, and that proper sharing occurs between the various producers. It ensures that timely recovery enhancement programs are instituted and that oil and gas treatment plants incorporate good engineering practices.

Review 1980-81

Oil and Gas Land Management

Oil and gas land activities during 1980 were conducted under the authority of the Canada Oil and Gas Land Regulations. Although no proposals for exploration agreements were sought from the public, six exploration agreements were concluded covering about 11 million ha in Baffin Bay and Davis Strait. These blocks were selected by Petro-Canada under preferential rights contained in the 1977 amendments to the Regulations. One additional agreement was negotiated for a single grid area in Davis Strait and at year-end negotiations were proceeding with Petro-Canada and others towards conclusion of exploration agreements for other prospects on the mainland and the arctic islands.

Although the total area of land holdings decreased about 8 per cent from 1979, the area under lease increased. Since the majority of the existing permits reached maturity during 1980, about half of the area held under exploration rights remains in the forms of permits in statutory terms. The remainder comprises special renewal permits granted under discretionary terms and conditions, and exploration agreements. Several leases containing commitments to drill wells were granted in support of current and proposed drilling programs in the southern territories and the Beaufort Sea. Exploratory operations concentrated in the more costly and remote regions, the arctic islands and the Beaufort Sea. Most of the holdings in these areas are in special renewal permits which bear annually escalating levels of work requirements designed to ensure an orderly assessment of Canada's potential for oil and gas reserves.



Warehouse/trades workshop constructed in Dawson City, Yukon, for Parks Canada by northern apprentices.

Number of issued exploratory rights

including permits, special renewal permits, exploration agreements) and leases, as of December 31, 1980.

Area	Exploratory Rights	Area (ha)
	No.	
Yukon Mainland	115	2 065 408
Northwest Mainland	45	590 202
Arctic Islands	657	12 397 699
Arctic Coast Marine	1695	41 668 832
Total	2512	56 722 141

Area	Leases	Area
	No.	
Yukon Mainland	1216	2 784 878
Northwest Mainland	188	265 974
Arctic Islands	173	513 522
Arctic Coast Marine	327	826 567
Total	1904	4 390 941

Revenues Received, 1980 (Calendar Year)

Yukon Territory	Revenues
	\$
Permit fees	Nil
Transfer fees	1 100
Lease fees	20
Rentals	396 871
Forfeiture	Nil
Bonus	Nil
Royalties	58 526
Total	456 518

Northwest Territories

Lease fees	475
Permit fees	250
Exploration Agreement fees	Nil
Transfer fees	48 832
Lease fees	3 510
Rentals	5 788 993
Forfeiture	Nil
Bonus	Nil
Royalties	Nil
Total	4 986 629
Total	10 728 689
Total for Territories	11 185 207

Exploration Activity

Expenditures by industry on oil and gas exploration in Yukon and Northwest Territories exceeded \$230 million in 1980, \$150 million less than in 1979. Exploration and development drilling expenditures decreased 50 per cent to \$195 million while total geological and geophysical expenditures increased 75 per cent to \$35 million.

There was little geological surface work carried out north of 60 during 1980. Petro-Canada and Esso conducted small programs on the mainland. Panarctic completed a half-crew month program on the arctic islands.

Marine seismic surveys were carried out in the Beaufort Sea by Canadian Superior, Dome, Esso, Gulf, GSI and Texaco for a total of 10 750 km. The Beaufort Sea programs included 3-D seismic programs by Esso at Adgo and Dome at Kopanoar. Aquitaine, Esso and Shell ran surveys totalling 3 500 km in the Baffin Bay - Davis Strait areas. Esso also conducted a 400 km detailed river seismic program in the Norman Wells area. Land seismic surveys increased substantially in 1980. On the mainland Northwest Territories, Esso, Petro-Canada and Mobil conducted surveys totalling 1 250 km. In the arctic islands, Panarctic ran surveys of 820 km on-ice and 235 km on Sabine Peninsula. Chevron conducted a 750 km survey on Banks Islands. Drilling activity in 1980 decreased to 19 wells, including 10 exploratory, seven development and one service well for a total of 42 325 m.

Dome/Canmar continued a drilling program in the Beaufort Sea. The Kopanoar I-44 well was drilled to a total depth of 644 m before being abandoned. The Tarsuit A-25 well, drilled to total depth in 1979 was tested and suspended as an oil and gas discovery. A number of wells were spudded or deepened for testing in 1981.

Esso drilled the Issungnak 0-61 artificial island well which was abandoned as an oil and gas discovery.

In the Davis Strait, Aquitaine drilled its Hejka 0-71 well to total depth. The well was tested and abandoned.

Panarctic drilled three wells in the arctic islands. One was an oil and gas discovery, two others were gas discoveries. In addition Panarctic and Dome drilled wells on Vesey and King Christian Islands but both were dry.

In the Mackenzie Delta, Esso drilled and abandoned the Mayogiak M-16 well.

Esso drilled four development and service wells at Norman Wells, while Paramount continued its drilling program with three wells in the southern mainland. Two were gas discoveries. In the southern territories, Texaco drilled but both wells were dry.

Columbia Gas continued its development program in the Kotaneelee Gas Field in Yukon Territory.

Production Activity

Gas continued to be produced at the Pointed Mountain field in the Northwest Territories and at the Kotaneelee gas field in Yukon. Oil production and refining continued at Norman Wells with 33 wells producing regularly in 1980. Drilling and construction activity continued at Norman Wells for the water-flood program.

Legislation

Bill C-48, the Canada Oil and Gas Act, was tabled in Parliament December 9, 1980. This legislation is one of the major elements of the government's National Energy Program.

The Bill sets out a management regime for exploration, development and production of oil and gas in Canada's frontier areas. It will increase Canadian ownership of resources through the reservation of a 25 per cent interest to the Crown in all rights to be granted under the Act. This interest may be assigned to Petro-Canada or other Crown corporations, or may be offered to Canadian companies. As a condition of a grant of a production licence, the Bill requires a minimum of 50 per cent Canadian ownership of the resources. The Bill provides for increased Ministerial discretion to demand that goods and services be provided by Canadians and that there be other considerations relevant to the concerns of northerners.

Canada Oil and Gas Land Regulations

Bill C-48 provides that the existing regulations continue until revoked or replaced. Certain provisions of the existing regulations will be overtaken by specific provisions immediately upon enactment of the legislation. The preferential rights for Petro-Canada in the existing regulations will be revoked. However, many of the existing regulatory provisions, including such matters as land division, methods and timing of applications, are likely to remain unchanged. New specific regulations will be required for such matters as eligible costs and investments for royalties, registration and filing of documents.

The Canada Oil and Gas Pipeline Regulations are being prepared for promulgation, and the Canada Oil and Gas Production Regulations are being re-drafted for review.

The Canada Oil and Gas Geophysical Regulations are being edited in preparation for promulgation in 1981.

The department and the National Energy Board have been asked to approve proposals to transport natural gas from the arctic islands by pipeline and combined pipeline - LNG tanker. Review of the proposals will continue through 1980-81.

Environmental and Geoscience Projects

The major research projects in 1980 consisted of Panarctic Oils Ltd. geotechnical and engineering studies related to the Arctic Pilot Project, and Dome Petroleum oceanographic and environmental studies in the Viscount Melville Sound, Amundsen Gulf and Prince of Wales Strait areas.

Plans for 1981-82

The main activity areas will be the arctic islands, Beaufort Sea and Norman Wells.

Exploration in the arctic islands will continue at the same pace. Four to five wells will be drilled, including at least three from artificial ice-islands. Seismic surveys will be restricted to inter-island ice programs.

Dome Petroleum, using three of its four drillships, expects to complete and test at least five wells in 1981. In addition, Dome is engaged in building artificial islands at the Tarsiut and Kaglulik well locations. Dome's fourth drillship will be loaned to Gulf to drill the Issungnak North well location.

Esso will continue to drill at least one well a year on the mainland of the Delta and near-shore delta areas. In March, 1980, Esso submitted a plan to initiate a total secondary recovery scheme for the Norman Wells field. This will involve drilling of injection and production wells on the mainland, the two islands and from artificial islands which will be constructed in the Mackenzie River.

In the southern territories, several operators will continue to drill shallow and medium depth wells in Devonian carbonates.

Mining Division

Responsibilities

This division is responsible for definition of mineral potential of certain areas in the North, advice to government agencies on current and proposed mining and exploration developments, the development of mineral policy and mining legislation, and for collection of mining royalties. The division in Ottawa comprises two sections: Mining Resources and Mining Lands.

In the North, all mine and mineral responsibilities are handled by Regional Directors responsible for the respective Northern Affairs Programs. Three separate sections are each located in Whitehorse, Yukon and Yellowknife, Northwest Territories. These include Exploration and Geological Services, Mining Lands, and Mining Engineering and Inspection Services.

The Mining Lands Section develops policies and initiates and assists in drafting legislation relating to the administration and disposition of mineral rights in Yukon and Northwest Territories. The section collects royalties payable from mining operations in the territories.

For administrative purposes, the territories have been divided into seven mining districts. A mining recording staff is responsible for the disposition of mineral rights within each district. There is a supervising mining recorder in each territory whose principal function is to ensure that uniform practices are observed.

The Mining Resources Section maintains a microfilm library on all published geoscientific reports and on unpublished assessment reports for Yukon and Northwest Territories. This office's prime concern is assessment and definition of mineral potential of specific commodities and areas in the territories relating to parks, land claims, transport-

tation routes and power development. This section and Mining Division inform and advise the Minister on current and proposed mine and exploration developments in the North. Monthly and annual reports on Mines and Mineral Statistics and Mines and Minerals Activities, are produced.

Exploration and Geological Services Sections provide a geological service to the mineral industry in the North. Offices are at Whitehorse and Yellowknife. Two core libraries, the H.S. Bostock Library at Whitehorse and the C.S. Lord Library at Yellowknife, preserve diamond drill core data. Regional and district geologists carry out mineral property examinations, collect rocks and mineral specimens and advise the mineral industry, government departments and research scientists on geological problems. Department geologists assist prospectors and other geologists with identification of rock and mineral specimens.

Mining Engineering

The Mining Engineering Section gives advice on the Mining Safety Ordinances and Mining Safety Rules and Regulations as well as the Blasting Ordinance and Regulations in Yukon and the Explosives Use Ordinance in the Northwest Territories. It also prepares safety legislation. Regional mining engineers are stationed at Whitehorse and Yellowknife. They are responsible for inspection of mines, quarries and blasting operations, inspection of mineral claims, ensuring that sufficient mine personnel are trained in mine rescue, recovery operations and first aid, ventilation and dust surveys, monitoring of radioactive contamination, and environmental studies of all underground and surface mining properties.

Yukon Territory

Mining Production and Development

Review 1980-81

Mineral production in Yukon Territory was valued at \$351 million excluding coal and natural gas, an increase of 17 per cent from 1979. Production was from four mines; Cyprus Anvil, United Keno Hill, Whitehorse Cooper and Tantalus Butte which produced zinc, lead, silver, copper, gold, cadmium and coal. Gold production was valued at about \$67 million of which about 78 per cent came from placer mining operations. Yukon accounted for 27.2 per cent of the lead and 8.5 per cent of the zinc, 12.3 per cent of the silver, 1.9 per cent of the gold and 1.4 per cent of the copper production in Canada. In 1980, Yukon accounted for 0.93 per cent of the value of total Canadian mineral production and for 3.1 per cent of Canadian metal production.

Some 1141 Yukon employees, or 4.5 per cent of the working force, are engaged in mining.

Placer gold mining was stimulated by high gold prices. During the year export royalties were paid on 73 026 ounces of gold from 150 placer operations.

Cyprus Anvil Mining Corporation milled 2 825 000 t in 1980 to produce 195 814 t of zinc concentrate, 116 490 t of lead concentrate and 13 548 t of combined lead-zinc concentrates. These figures represent a decrease of about one per cent for zinc, 12 per cent for lead and 53 per cent for combined lead-zinc. A work force of 567 was employed at the mine.

Tantalus Butte Coal Co. at Carmacks mined for a short period during the summer. Coal from the mine was stockpiled and delivered to the Cyprus Anvil Mine as a backhaul by trucks which transport lead and zinc concentrates to Whitehorse. Cyprus Anvil Mines, owner of the mine, uses the coal for drying lead and zinc concentrates at the Faro concentrator.

United Keno Hill Mines Ltd. produced silver-lead-zinc from five underground mines: Husky, Keno, No Cash, Ruby and Elsa and two open-pit mines; Sime and Silver King. In addition, lower grade open-pit ore from previously mined Bermingham pit accounted for 33 per cent of the tonnage. In 1980 mine production totalled 79 635 t down 21 per cent from 1979. All production ceased September 10 when a strike occurred at the mine. It was still in effect at year-end. Consequently, silver production of 1 655 000 oz during 1980 was substantially less than the 2 481 000 oz produced in 1979. A work force of 330 was employed.

Whitehorse Cooper Mines Ltd. mined a higher grade of copper ore from its underground mine near Whitehorse. The ore grade improvement resulted in a 35 per cent increase in copper production to 10.7 million kg. During 1980, 775 000 t of ore was milled. Silver production increased 40 per cent from the previous year to reach 236 664 oz while gold production increased 37 per cent to reach 21 674 oz. As of January 1, 1980, reserves amounted to 4.6 million t. A work force of 211 was employed.

Development work continued on a number of properties. Cyprus Anvil Mining Corp. announced an expansion program which included development of two new open pit mines on the Grum and Vangorda orebodies. By 1985 the Vangorda pit will be mined concurrently with ore from the Faro mine and by 1988 the Grum pit will begin production. The development will extend mining in the Anvil area from 1989 to 1997. The \$240 million program will be spread over eight years, 1980-88. Substantial modifications to the Anvil mill, expansion of the tailings containment area and construction of a new power plant are required. Mill modifications are scheduled for completion by the end of 1981 at an estimated cost of \$71.5 million.

United Keno Hill Mines Ltd. is developing for production its Venus Mine, a gold-silver-lead vein deposit. The mine is 88 km south of Whitehorse near the Yukon-British Columbia border. The mine and new 91 tonne-per-day mill under construction are scheduled to be in production in late summer 1981. Reserves are gold, silver, lead, zinc and cadmium.

Canada Tungsten Mining Corporation commenced operations at Dublin Gulch in June with its 1520 m³ per-day placer plant designed to recover fine gold and scheelite.

A \$300 000 bullion refinery is being constructed at Elsa by United Keno Hill Mines to treat cyanide precipitates from Keno Hill and Venus operations. The refinery will produce 950 kg fine silver.

Mineral Exploration

Review 1980-81

Mineral claims staked and recorded in Yukon during the year, with comparative figures for 1979 are:

<i>Districts</i>	<i>Claims Recorded</i>	
	1980	1979
Whitehorse	3 281	1 942
Dawson	2 091	2 175
Mayo	2 253	3 197
Watson Lake	3 545	4 012
Total	11 170	11 326

In addition 3632 placer claims and 938 placer leases, largely in the Dawson District, were registered. This compares to 1979 figures of 2479 placer claims and 446 placer leases.

Exploration activity in Yukon continued at a strong pace with emphasis on drilling and intensive property evaluation. Expenditures increased 45 per cent to \$39.4 million in 1979 to \$32.8 million during 1980. Exploration projects in 1980 continued to reflect interest in tin, tungsten and molybdenum, and lead and zinc continued strongly. Emphasis on uranium exploration all but disappeared. The most significant change was the increased emphasis on precious metals, particularly gold.

Hudson Bay Mining and Smelting started a three-year, \$10 million underground exploration and development program on its Tom property, a stratiform lead-zinc-silver-barite deposit at MacMillan Pass. The company did 1 400 m of fill-in drilling. The program entails underground development and exploration including a decline to be driven in 1981. The program is preparatory to a final feasibility study.

Also in the MacMillan Pass area, straddling the Yukon-Northwest Territories border, is the MacTung tungsten deposit of Amax of Canada Limited. A final feasibility study based on 907 t per day underground operation is expected in the spring, 1981, and the company plans to make a production decision soon after.

Logtung Resources Ltd. and Amax Minerals Exploration reported that 11 holes totalling 2 850 m were drilled on the Logjam scheelite - molybdenite property. A 500 m decline was completed and underground bulk sampling was carried out.

At Howard's Pass, Placer Development Ltd. continued exploration on its shale-hosted lead-zinc deposits. In 1980 an adit was driven into the main mineralized zone to check the continuity of mineralization and to obtain bulk samples for metallurgical testing.

The search for molybdenum continued in 1980 by several companies. A major program was continued for the third summer by Tintina Mines and Amoco Canada Petroleum Company on the Red Mountain property, 80 km northwest of Whitehorse. In 1980, a 6000 m drilling program at Red Mountain was completed. Fill-in drilling progressed well and showed mineralization for more than 1200 m depth.

Gold and silver have long played a key role in Yukon mining and activity increased as prices soared.

Placer activity, concentrated in the Dawson Mining District, increased substantially over 1979. About 7500 claims, nearly double the number of two years ago, were in good standing in the District in December, 1980.

Gold Creek Mining Ltd. reported on its new placer gold mine at Rude Creek. During a 550-hour period of sluicing, 921 oz of crude gold were recovered. Refining operations indicate the crude gold contains 80.7 per cent gold and 11.2 per cent silver.

Several major companies investigated silver prospects during the field season. Prism Resources Limited carried out an extensive program 69 km northeast of Keno Hill with 43 drill holes on its Vera claims and another nine holes on the nearby Val group. About 272 000 t of drill indicated reserves have been blocked out on the Vera silver-lead prospect. An adit is being considered for 1981.

Northwest Territories

Mining Production and Development

Review 1980-81

Metal mining production in the Northwest Territories during 1980 was valued at \$357 million, excluding tungsten which was valued at approximately \$67 million. Metal production came from eight mining establishments which produce zinc, lead, tungsten, gold, silver and copper.

The NWT accounted for 100 per cent of the tungsten, 19.3 per cent of the lead, 20.8 per cent of the zinc, 6.1 per cent of the gold, and 4.4 per cent of the silver production in Canada. In 1980 the NWT accounted for 1.2 per cent of total Canadian mineral production and 4.1 per cent of Canadian metal production.

There were 1 950 employees equalling 6.8 per cent of the NWT work force engaged in mining.

Canada Tungsten Mining Corporation operated above rated mill capacity of 900 t per day throughout the year. In 1980, production was 4 650 000 kg of tungsten trioxide, an increase of 43 per cent from the previous year.

Increased production and slightly higher prices lead to increased revenue. An average of 220 employees were employed during the year.

Cominco Ltd.'s Con Mine produced 96 944 oz gold and 678.7 kg silver during 1980 from 191 868 t of ore. An average of 325 employees were employed during the year.

Giant Yellowknife Mines Limited produced ore from underground and open-pit operations. In 1980, production was 38 285 oz gold, a drop of 49 per cent from the previous year. Milled ore declined to 199 788 t in 1980 from 354 741 t in 1979 because of work stoppages in April and a strike from July 10 to October 24. An average of 320 employees were employed during the year.

Echo Bay Mines Ltd. continued production from the Colorado Mine and produced ore from the Contact Lake Mine leased from Ulster Petroleum. A total of 36 531 kg of silver and 67 320 kg of copper were produced from 36 592 t of ore. Silver production declined by 41 per cent. A work force of 135 employees were at the mine year round.

Terra Mining and Exploration Ltd. and Norex Resources had substantially lower production from their mining properties at Camsell River. In 1980, production amounted to 7584 kg of silver and 212 042 kg of copper from 27 910 t of ore. This compared with 11 201 kg of silver and 294 958 kg of copper from 31 021 t of ore in 1979. Terra has been involved in an extensive exploration program investigating favourable zones and extensions of known veins. A work force of 55 employees was at the mine year round.

Nanisivik Mines Ltd. milled 435 147 t of ore in 1980 to produce 53 748.5 kg of zinc in concentrate and 3 442.8 kg of lead in concentrate—a decrease of 30 per cent for zinc and 45 per cent for lead from 1979. A work force of 220 was employed.

Pine Point Mines Ltd. increased its mill tonnage to 289 449 t in 1980 from which it produced 143 033 t of zinc in concentrate and 51 566 t of lead in 74 207 t of lead concentrate. However, metal production declined five per cent for zinc and four per cent for lead. A work force of 610 was employed.

Noranda Mines Ltd. and its subsidiary Palmour Porcupine Mines Ltd. reopened the Camlaren gold mine leased from Discovery Mines Ltd., at Gordon Lake, 100 km northeast of Yellowknife. The installation of the 135 t per day mill and development of the mine to the 318 m level were completed in July at a cost of \$900 000. The mill processed 11 142 t of ore to produce a concentrate containing 4 738 oz gold and 1 291 oz silver. The property has an estimated production life of about three years. A work force of 54 was employed at the mine.

Projections to late 1982, indicate that at least four underground mines will be producing in the NWT. These are Cadillac Explorations Ltd.'s Prairie Creek Mine, Cullaton Lake Gold Mines, Echo Bay's Lupin Mine, and Cominco Ltd.'s Polaris Mine.

In the Nahanni region, Cadillac Explorations Ltd. is planning a \$35 million underground mine at its Prairie Creek lead-zinc-silver deposit for initial production by late 1981. During 1980, a winter road was built from the mine to the Mackenzie highway and mine development work was carried out. Cadillac has sold a 40 per cent working interest in the Prairie Creek project to Procan Explorations Co. for \$50 million.

Cullaton Lake Gold Mines, a joint venture of Consolidated Durham Mines and Resources Limited and O'Brien Energy and Resources Limited, is developing its mine in the Cullaton Lake area, Keewatin District, with a program of 2600 m of underground advance and 6100 m of underground drilling. The company has announced a financing agreement with Inuit Development Corp. that will provide \$25 million to bring the property into production in the summer, 1981. Drill indicated reserves are 285 000 t grading 25.37 g gold per tonne.

IU International Corp., through its wholly-owned subsidiary Echo Bay Mines Ltd., will bring its Lupin gold property at Contwoyto Lake into production in late 1982. Some \$10 million of the \$100 million development program has already been spent on exploration and preliminary development work. The deposit has been probed by a 1060 m decline ramp and the company has expanded its airstrip to handle Hercules aircraft. Initial milling capacity will be 900 t per day. Known reserves give the mine a life expectancy of seven years.

Cominco has started development of its \$150 million Polaris lead-zinc mine on Little Cornwallis Island. Polaris will be the most northerly mine in the world. The mine's annual production, an estimated 170 000 t of zinc concentrate and 38 000 t of lead concentrate, will be shipped in ice-breaking and ice-strengthened vessels during the summer navigation season in arctic waters. Initial production is expected early in 1982, and the 2000 t a day mill will be floated on a barge from Lauzon, Quebec, to the mine area in 1981. Ore reserves are estimated at 23 million t.

Mineral Exploration

Review 1980-81

Mineral claims staked and recorded in the Northwest Territories during the year, with comparative figures for 1979 are as follows:

Districts	1980		1979	
	Claims Recorded	Area (ha)	Claims Recorded	Area (ha)
Mackenzie	487	306 633	780	579 937
Arctic and Hudson Bay	773	534 552	528	454 961
Nahanni	71	25 244	42	17 093
Total	1 331	866 429	1 350	1 051 992

Exploration expenditures in 1980 are estimated at well over \$30 million, about 50 per cent of which was spent on drilling. Exploration projects were heavily directed toward uranium, Mississippi Valley type lead-zinc deposits and precious metals. Surface drilling totalled 224 731 m to October, 1980, with 35 per cent of the work concentrated on lead-zinc deposits in the Pine Point District. Uranium exploration reached the drill-test stage in many areas and uranium accounted for 25 per cent of all drilling, of which 75 per cent was in the Keewatin District. Continued high prices for precious metals resulted in a high level of drilling primarily in Slave Province.

Uranium exploration continued largely in Proterozoic basins containing sediments and metasediments known to contain several styles of uranium deposits. The main areas of uranium exploration include: Baker Lake - Thelon River, Yathkyed Lake, Nonancho Lakes, Melville Peninsula, Baffin Island north of Fury and Hecla Straits, and Coppermine - Dismal Lakes. Activity also occurred in the East Arm, Great Slave Lake and south of Great Bear Lake.

Several significant uranium deposits have been discovered in the Baker - Dubawnt area over the past few years.

During 1980 additional uranium mineralization was outlined in the Baker Lake area. Urangesellschaft Canada Limited continued to drill its Lone Gull deposit and to extend the dimension of mineralization. In 1979, the deposit was estimated to contain an indicated 9.1 million kg of uranium oxide on the basis of the first 40 drill holes. In 1980, Urangesellschaft completed 9000 m of diamond drilling on the Lone Gull property, 2500 m in the Judge Sissons Lake area and 400 m in the Marjories Lake area. Pan Ocean Oil drilled more than 6000 m, southeast of Baker Lake in the Bissett Lake - Martell Lake area. Significant uranium mineralization was found in five holes in a brecciated zone.

In base metals exploration, Cominco Ltd. drilled 18 holes totalling 1 265 m in the Main A - Zone deposit of the Bathurst Norsemes Ltd. property, Hackett River area. The drill program outlined continuity of the zinc-silver-lead-copper mineralization.

Nanisivik Mines Ltd. continued its exploration program for lead-zinc near Strathcona Sound and Cominco Ltd. drilled on claims near the Taylor River and Allan River, Cornwallis Island and on new permits on northern Cornwallis Island. Pine Point Mines announced that it had conducted a major diamond drilling program that had delineated 5.4 million t of 10-12 per cent combined lead-zinc ore on a separate reef zone near the northern boundary of its claims near Pine Point. Western Mines also completed its 1979-80 winter drilling program on the Slave reef project.

The Bear province was the main area of silver exploration in 1980. Underground and surface drilling continued at Terra Mining and Exploration Limited's Silver Bear Mine and at Echo Bay Mine's Eldorado Mine, Contact Lake and El Bonanza prospects.

In the Slave province, exploration for gold was the main interest and drilling was carried out by Canuc Resources, Texasgulf Inc., Giant Yellowknife Mines Ltd., Cominco Ltd., Goldfields Corp., Noranda Exploration Co. Ltd. and Hidden Lake Mines Ltd.

In the Yellowknife - Beaulieu River area, Placer Development Ltd. drilled the Highwood Resources Ltd. Thor claims. The drilling outlined extensive deposits of tantalum and columbium near Thor Lake.

Mining Safety Statistics

There was one fatal mining accident during 1980 in the Yukon. The fatality at United Keno Hill Mines was due to a rock fall from the back of a subdrift. There were, however, 101 disabling injuries that caused the loss of 8 467 person days. Person strain while lifting caused most of the disabling injuries. Other causes were: falls (11); matter in eyes (5); struck by moving object (5). These causes accounted for 46 per cent of all injuries.

There were two fatal mining accidents during 1980 in the Northwest Territories. One of the fatal accidents was caused when a person was caught between a locomotive and a ventilation door frame at the Echo Bay Mine. The second was in November at Pine Point Mines, when a dozer operator was run over by his machine. There were 185 disabling injuries that caused the loss of 16 458 person days. The main causes of disabling injuries were: strain while lifting (35); falls (30); caught between two objects (21); struck by moving objects (13). These accidents accounted for 46 per cent of all injuries.

Northern Economic Planning Branch

Regional Planning Division

Responsibilities

The division formulates and coordinates development plans for regions of the North with the territorial governments and other federal departments. It conducts studies of general economic conditions in the North; forecasts socio-economic problems and opportunities resulting from structural and institutional changes in the northern economies; and monitors governments' responses to economic development recommendations of public advisory groups and regional economic conferences.

Review 1980-81

The Regional Planning Division negotiated for the introduction of a Canada/ Northwest Territories subsidiary agreement on Area and Community Economic Development. It also worked toward the finalization of plans for and the implementation of the Canada/ Yukon subsidiary agreement on tourism, as well as the introduction of a Canada/ Yukon subsidiary agreement on a Yukon Business Development Assistance Program. In addition, the division was involved in the preparation of economic plans as part of the Lancaster Sound Regional

study, examined the requirements for regional economic planning associated with hydrocarbon production in the Beaufort Sea, and completed an economic and land use overview to support the regional development plans for the Mac Pass area. The division also completed Phase I of a study examining the factors which contribute to the cost of food in the northern territories.

Plans for 1981-82

The division will: complete Phase 2 of the study on the establishment of native development corporations in the northern territories; complete phase 2 of the study on the factors contributing to the high cost of food in the northern territories; examine the economic implications of land claims in the northern territories; prepare regional plans related to development in Lancaster Sound, the Beaufort Sea and the Mac Pass areas; finalize plans for the signing and implementation of a comprehensive Canada/Yukon subsidiary agreement on economic development in the Yukon and a Canada/Yukon subsidiary agreement on a Yukon Business Development Assistance Program; finalize plans for the signing and implementation of a Canada/Northwest Territories subsidiary agreement on Area and Community Economic Development.

Employment and Socio-Economic Planning Division

Responsibilities

The division develops policies and plans to provide maximum socio-economic benefits to all northern residents. The work involves the analysis of economic development activity and the development of mechanisms and procedures to ensure adequate consultation and involvement with northerners, the creation of opportunities for training, employment and local business, and the minimizing of adverse social and cultural impacts.

Review 1980-81

The division worked with territorial officials and petroleum industry representatives to develop socio-economic memoranda of understanding which establish company policies and action plans for maximizing benefits to northern residents and minimizing adverse impacts. The areas covered were the Beaufort, the high arctic and the south Baffin. Preliminary work on the socio-economic aspects of the proposed expansion of the Norman Wells oil field was also undertaken. The policies and plans of a number of proposed mining projects were reviewed and the socio-economic impacts of the Nanisivik Mine were monitored. Arrangements were made for the Minister to meet with senior executives of mining and petroleum companies.

Plans for 1981-82

The division will continue to explore more effective techniques or encouraging industry to provide greater local benefits from their activities north of 60°. There will be discussions with territorial officials to clarify respective roles and responsibilities. The division will participate in planning for major northern projects such as the Norman Wells field development, the Arctic Pilot Project and the proposed Beaufort Sea development phase.

Northern Roads and Airstrips Division

Responsibilities

The division has program and policy responsibility for development of the northern roads. It emphasizes the coordination of socio-economic, financial and environmental aspects in the planning of new roads. The responsibility for maintenance and management of roads has been transferred to the territorial governments.

Review 1980-81

The Liard Highway will link Fort Nelson, B.C., on the Alaska Highway with the Mackenzie Highway near Fort Simpson, NWT, by 1983. Construction work on the highway continued this year, bringing the amount of subgrade completed to 134 km. Two bridges over the Blackstone River were also constructed. Special efforts have been made to arrange small contract packages on the highway so that opportunities will be available for small northern contractors.

Hire North, an agency of the Government of the Northwest Territories established in 1972 to provide highway construction training and employment to native people, continues to work on sections of the Liard Highway.

The Dempster Highway runs 674 km northward from Flat Creek (near Dawson), Yukon, to meet the Mackenzie Highway, 63 km south of Inuvik, NWT. Graveling of 105 km of the highway was completed this year. Future work on the highway will involve graveling, reconstruction of older sections of the highway and replacement of temporary river crossings.

A committee of representatives of the territorial governments has undertaken the implementation of a management plan that will permit year-round use of the highway with minimum adverse impact on the environment. The division continued to support studies of the impact of the highway on caribou with the view to obtaining additional information for the best management plan.

The subgrade of the Carcross-Skagway Road has been virtually completed. Final gravel surfacing is still required and guidrails and delineators must be installed. The highway will be officially opened in the summer, 1981.

The Shakwak Project continued, involving the reconstruction and paving of the Haines Road from the Alaska/British Columbia border to Haines Junction and of the Alaska Highway from Haines Junction to the Yukon/Alaska border. The project began in 1977 as a joint program of Public Works Canada and the United States Federal Highways Administration. It was expected to be completed at an estimated cost of \$200 million in ten years. Since only \$56 million dollars has been approved by the U.S. Congress, the project has been limited to the reconstruction of the Haines Road.

The Northern Resource Roads Program provides financial assistance in the construction of initial and permanent access roads to resource development areas. The final payment of a cost sharing agreement under this program was made to Placer Development Limited for the construction of an 80 km access road to the Howard's Pass property from km 187 of Nahanni Range Road.

Data Management Division

Responsibilities

The division collects, compiles and analyzes data required for economic planning, evaluation and development. Working with the territorial governments and Statistics Canada, the division promotes the development of data collection systems and models to produce various economic indicators.

Review 1980-81

Work on the updating of the economic accounts to 1977 was completed. A report is being prepared from these materials for each territory for the years 1967 to 1977 and for the combined territories for 1961 to 1966. Estimates of gross domestic product and other economic indicators for each of the territories for 1978 have been completed.

Action was taken during the year to start two studies. The first, a feasibility study of the possibility of mounting a longitudinal survey of the work experience, income, consumption habits and the wealth of native households is being undertaken by the Institute of Northern Studies. The second study is the development of input-output models of both territories for 1981. Better information on the structures of the two territorial economies will improve the branch's understanding of the factors influencing economic development and growth.

Work continued on the development of a "data base system", emphasizing demographic statistics and economic and financial data on the mining and oil and gas industry sectors. A start was also made on the collection of information on small business activities.

The division developed a set of specific operational goals for the five-year period ending in 1984-85 and established target dates for their achievement.

Plans for 1981-82

In general, the momentum achieved with respect to the projects mentioned will be carried into the new fiscal year. The completion is projected of the modules of the "data banks system" for demographic data, labour force/employment data and information on the mining and oil and gas industry sectors. Work on the updating of the economic accounts to 1978 will be undertaken and a new project to deflate the gross territorial expenditures of both territories for the period 1967 to 1977 to constant dollar values is being organized.

As in the past, the division will continue to be engaged in a number of studies concerned with forecasts of the economic situation in the territories. Special attention will be paid to the present and future situation of the oil and gas industry sector.

Economic Analysis Division

Responsibilities

The division provides advice on northern development strategies, policies and plans. It does economic analyses of non-renewable and renewable resource development, energy and mineral policies, transportation and communications, the native economy and projects of Crown corporations and government investments.

Review 1980-81

Resources

The mining cash flow model (CASHSIM) is operational. The model calculates detailed physical production and revenue for up to five different metals, detailed operating costs, profits, corporate income tax and royalty under different royalty regimes, cash flow and financial indicators.

A preliminary review and evaluation was completed of the potential for the development of a Yukon barite supply and its related socio-economic impact. The study reviews the characteristics of the barite industry in Canada and Alaska and assesses potential Yukon sources and their financial viability and competitiveness in various markets.

Objectives and guidelines were developed to review the royalty provisions in the proposed Yukon Mineral Bill. An interdepartmental committee was established to carry out the review and develop new royalty proposals.

An evaluation of the Strathcona Sound Project (Nanisivik Mines) was undertaken to assess the extent to which government objectives have been met.

An economic feasibility study of a lead-zinc smelter in Yukon was submitted by the Cyprus Anvil Mining Corporation, in accordance with the agreement signed in 1967 between the company and the federal government. An interdepartmental working group was established and is currently assessing the study.

In November, 1979, the British Columbia government initiated the establishment of a government-industry steering committee to conduct a pre-feasibility analysis of the prospects for the development of a new lead-zinc smelter in B.C. The analysis was conducted by three sub-committees covering markets, supply of concentrates and policy and legislative areas. The Sub-Committee on Policy and Legislative areas, prepared a report in February, 1981.

Financial and technical assistance was provided to BRIA to continue the harvesting study recording species for each Baffin Region community.

Background information and assistance was provided to other areas in the department on studies of such issues as native land claims settlement, the Lancaster Sound study and the Norman Wells project.

Energy

Two subsidies, the Commercial Power Rate Policy Subsidy and the Domestic Home Heating Oil Subsidy, were approved and implemented by the federal government during the fiscal year. Agreements were completed with both territorial governments for the administration of the subsidy programs.

A task force was formed to prepare a northern energy strategy. It is composed of representatives from each of the two territorial governments, the Department of Energy Mines and Resources, the Northern Canada Power Commission and the Department of Indian Affairs and Northern Development, which provides a leadership role.

Studies on the demand and supply of energy for Yukon and Northwest Territories were initiated and completed.

liaison was maintained with the territorial governments and the Department of Energy, Mines and Resources.

A study on the electrification of the compressor stations of the proposed Alaska Highway Gas Pipeline in Yukon Territory was completed by Westwater Research of the University of British Columbia.

The division participated in the preparation of background economic analysis for Treasury Board and Cabinet for the construction of a 20 megawatt hydro project for Whitehorse. It was approved by Cabinet during fiscal year 1980-81.

Transportation

A number of economic and financial studies dealing with different aspects of northern transportation were undertaken. The following studies were completed: cost-effectiveness analysis of alternative means for resupply of Old Crow; calculation of transportation and handling costs associated with development of Yukon barite sources to serve northern markets; cost-benefit analysis to determine economic viability of a year-round permanent bridge crossing of the Mackenzie River at Fort Providence; a preliminary investigation of the financial and technical aspects of coal slurry movement by pipeline from Bonnet Plume Basin.

Canac Consultants Ltd. and Canadian Pacific Consulting Services Ltd. developed capital and operating cost estimates for the potential movement of base metal concentrates from the Northeast Mackenzie District, east of Great Bear Lake. Consideration was given to three options; northbound truck/rail movement via the Great Slave Lake Railway from Hay River and southbound rail movement via an extension of the GSLR system.

Two applications were evaluated for financial assistance to construct a permanent access road and an airstrip in accordance with departmental incentive programs. An agreement for federal government assistance to the White Pass and Yukon Railway was completed with an initial capital grant of \$2 million in 1980-81 and a further \$3 million to come in 1981-82.

Plans for 1981-82

An overview of mineral development opportunities for Yukon to year 1990 will be done. The evaluation of the Cyprus Anvil Smelter feasibility study will be completed and development of new royalty provision for the Yukon and NWT will occur. There will be a preliminary evaluation of the cost and benefits related to the development of coal resources in Yukon Territory and a regional development study of the MacMillan Pass area will start. The Strathcona Sound Evaluation Study will be completed.

The northern energy strategy task force work will continue, culminating with the preparation of strategy and position papers and memorandum to Cabinet.

The following financial and economic investigations of transportation projects will be conducted: analysis of user charges for cost-recovery of government expenditures in road transportation infrastructure; identification of cost-effective road alignment and standard for access to MacMillan Pass/Howards Pass; completion of studies associated with Federal/Territorial Northern Food Costs Pilot Project including assessment of transportation and distribution costs for select food-stuffs at four Baffin region communities; evaluation of existing transportation incentive programs available to northern resource developers.

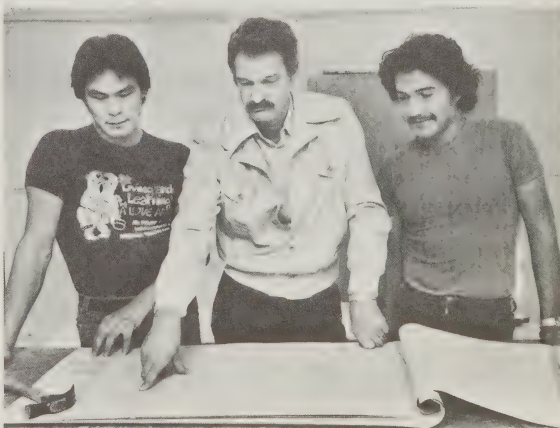
Northern Pipelines Branch

Responsibilities

The branch is the focal point for the planning, public review, assessment and post-permit responsibilities for all hydro-carbon transportation proposals north of 60°. It coordinates assessment and review activities within the department and between the department and territorial governments, other federal departments and agencies. The branch is also the base for the interdepartmental policy committee for major resource development projects in the North. There are three divisions: Planning, Assessment, and Public Review.

Review 1980-81

Assessments were completed of the Arctic Pilot Project application to transport liquefied natural gas (LNG) by tanker from the arctic islands and the Norman Wells development proposal to transport oil by pipeline from Norman Wells to an Alberta distribution point. An interdepartmental task force was established to consider overall government planning for hydro-carbon development in the Beaufort Sea.



Apprentice supervisor/instructor Ken F. Cannon of the Vocational Training Section, Northern Programs (centre) discusses construction details with fourth year carpentry apprentices, Joanasi Saviakjuak (left) of Sugluk, P.Q., and Freddy Lutz (right) of Watson Lake, Yukon.

Public reviews of the environmental and socio-economic aspects of the Arctic Pilot Project and the Norman Wells development plan were carried out in cooperation with FEARO. Reports of the findings were released. The Beaufort Sea oil and gas activities proposals were referred to FEARO for review. The department's ongoing responsibilities in Yukon in relation to the Alaska Highway gas pipeline were carried out through liaison with the Northern Pipeline Agency.

Plans for 1981-82

The NEB report on the Norman Wells development plan will be reviewed and coordination of departmental responsibilities for the proposed project will be carried in the branch. It will monitor the NEB hearings on the Arctic Pilot Project and continue activities related to the Alaska Highway gas pipeline.

The branch will be the focus for the interdepartmental project office, formed to handle government responsibilities for the Beaufort Sea oil and gas development activities. Among the responsibilities carried by the branch will be the socio-economic and environmental assessment of the proposal and participation in the FEARO public review. In addition, coordination will be carried out of activities of the inter-departmental policy committee concerned with overall government planning for resource development projects.

A new application is expected from Polar Gas for a "Y"-line route to bring natural gas by large-diameter pipeline from the arctic islands to the south. Additional proposals to transport hydrocarbons from the arctic are also anticipated.

Indian and Inuit Affairs Program

Responsibilities

The Indian and Inuit Affairs Program assists Indians and Inuit in the Northwest Territories and Yukon Territory to achieve their cultural, social and economic goals. The program works in cooperation with native groups, associations and the territorial governments.

Review 1980-81

A total of \$80 000 was allocated in Yukon Territory and \$56 000 in the Northwest Territories during the 1980-81 fiscal year to support the Band Training Program.

In the Yukon Region, the program emphasized a culturally sensitive approach to community development and band management. A home-study method was developed and field-tested to determine ways and means of meeting specific educational requirements of native northerners. The study program has been expanded to include technical-vocational skills, a wide range of academic disciplines and program-oriented training in the leadership and management areas.

In the Northwest Territories, band training initiatives were primarily band councillor workshops in economic development, core funding, finance programs, and monitoring of audit and local government activities. Field trips to various bands enabled chiefs and councillors to foster mutual support in band activities.

A total of \$35 000 was spent in the Yukon and NWT for CESO (Canadian Executive Services Overseas) services. Twelve socio-economic development projects were assisted by CESO volunteers; eight in the Yukon and four in the NWT.

Regional Offices

Northwest Territories

Responsibilities

The Regional Office of Indian and Inuit Affairs in Yellowknife, NWT, in consultation with 16 band councils, native associations and the NWT government, assists the registered Indian population in social, economic and band development. Programs include satisfying the government's annual treaty obligations to bands and individual Indians and making core funding available to band councils. Funding enables each council to develop an administrative office and provide administrative and financial management training to councils and staff.

The Economic Development Program provides advisory and financial assistance to Indian people for their socio-economic development and liaison with the various levels and agencies involved in economic development in the North.

Review 1980-81

Band councils continued to improve their management and administrative capabilities. Twelve councils hired band managers who assist with business development and the management of job creation programs.

The Economic Development Branch provided financial assistance and advisory services to 49 established native enterprises and nine new business or significant business expansions. Fort Rae opened a new commercial complex. Six band economic development committees have been established by band councils to plan and implement economic development projects. The Band Training Program continued to focus on the training of band staff. One- and two-week sessions were offered to band secretaries and managers. Several band councils were taken on tour of Alberta reserves and saw band council organization and management systems in operation.

Plans for 1981-82

Socio-economic development will continue to be the main concern of the region. The Band Works Program should enable more bands to employ managers to assist in the development of business and job creation. The training program for band staff and band councils will continue.

The Economic Development Program will provide advisory and financial services to native enterprises. Several more community-based economic development committees will be established. It is estimated that 10 new businesses or business expansions will receive assistance during 1981-82.

Yukon Territory

Responsibilities

The Yukon Region of the Indian and Inuit Affairs Program maintains administrative functions to approximately 3 200 status Indian residents of Yukon Territory and the communities of Atlin, Good Hope Lake and Lower Post, in British Columbia. The program helps Yukon Indian people achieve their cultural, social and economic goals and ensures that Canada's constitutional and statutory obligations and responsibilities are fulfilled.

Social Development Program

Review 1980-81

The number of bands administering the Social Assistance Program on behalf of the department increased from ten to 12. There remains only one band which does not administer its own program.

Social assistance increased at the regional office level, a reflection of spiralling unemployment within a generally depressed economic condition.

Social service training, a high priority of the Social Development Program, was begun during 1979-80. Following completion of the initial course in March, 1980, graduates pursued employment as band social service workers, alcohol counsellors and counsellors at the Transition Home for Women. Training during 1980-81 was conducted in Whitehorse. Conducting courses at a single location, distant from the communities, posed scheduling problems and community-based training seems more appropriate. Training to establish manpower expertise at the band level has become increasingly important.

During 1980-81, budget restraints inhibited plans to stimulate community involvement in local child care, adult care and rehabilitation activities.

Plans for 1981-82

Plans for the coming year will attempt to consolidate and trench gains made over the past two years.

Administrative responsibility and those functions associated with band administration of programs will be a high priority. The identification and sound administration of child welfare, adult care and rehabilitation services at the local level will be pursued.

The NNAAP Regional Advisory Board and the Territorial Standing Committee on Drug Abuse will continue efforts to promote the integrated approach in connection with alcohol and drug problems. The Child Welfare Agreement will be clarified.

Departmental initiatives this year will also strive to better define the roles of the Council of Yukon Indians and the Territorial Government and the department's own responsibilities with regard to community-based training.

Local Government Program

Review 1980-81

As in past years, 15 Indian communities in the Yukon Territory and northern British Columbia received funding for community services administered by bands. The programs made available to Indian communities were: core funding, overhead costs, water and sanitation, road maintenance, fire protection and recreation.

The Local Government Program also provided capital funding to band councils, enabling them to construct housing and other band buildings, install sewer and water facilities and purchase land for Indian housing.

Plans for 1981-82

The control and management of community services programs will continue to be administered by bands. More emphasis will be placed on the development of community-based planning and band staff training.

It is expected that the overall plan for the development of local government programs will be completed during this year.

Reserves and Trusts

Review 1980-81

Though many problems regarding the occupation of Indian lands have been resolved during the past year, new land-associated concerns have surfaced. Solutions to these concerns are currently being sought.

Plans for 1981-82

Identification, documentation and resolution of land-associated problems will constitute the objectives for this year's activities.

Education Branch

The Indian and Inuit Affairs Program is directly involved in post-secondary, adult and occupational skills training programs.

Review 1980-81

During 1980-81, 26 students were sent to colleges and technical training institutes. Eight students attended university programs in British Columbia, Alberta and Ontario. Three university graduates completed courses in education and science. Eighty elementary and secondary students were placed in Yukon Hall and attended classes in Whitehorse. Thirty students were placed in band-operated homes and attended school while their parents pursued trapping and other activities. Thirty-four students were placed in boarding homes in Whitehorse and Watson Lake.

This past year the 12-week welfare administrator course graduated 18 candidates who returned home to work for their bands. Short term courses were held in band management. A second-year welfare administration course is being planned for this year.

Plans for 1981-82

Plans include improvement of the calibre of education made available and the development of community education committees to ensure continued student interest in school.

Economic Development Program

Review 1980-81

The Economic Development Program assisted Indian people in the development and expansion of economically-independent businesses and in the creation of employment opportunities. The program provided contributions, loans and business services.

During the past year, loans totalling \$114 000 were made to Indian businessmen. One cooperative store was opened and one commercial fishing operation was established. Existing businesses received financial assistance for expansion.

Contributions totalling \$67 300 were disbursed to both existing and new businesses. Assistance was given for such enterprises as trapping, hunting, outfitting and filmmaking.

Contribution funds were disbursed to three bands, thus enabling them to participate in socio-economic projects.

Plans for 1981-82

Plans are under way to make funding available to bands so that each can establish a community-based trappers assistance board.

Regular monitoring of ongoing projects, securing of appropriate advisory services and analysis of problem areas are intended activities.

It is anticipated that 15 new businesses will receive funding this year and that 10 existing businesses will receive financial support. ■

ITC

Canadian Government Office of Tourism

Responsibilities

Projects of the Canadian Government Office of Tourism (CGOT) are related to tourism objectives, development plans and strategies at both federal and provincial/territorial levels.

Review 1980-81

Following consultations with the tourism departments of Yukon and Northwest Territories, CGOT acquired \$58 947 from the Canada Employment Program (SYEP) for four projects covering 28 jobs or 367 work-weeks of employment.

The project in the Yukon assisted the Yukon Historical and Museum Association to prepare a photographic record on Yukon lifestyles and sound recordings to complement the photographic record. It also helped to update the Yukon Archives Visual Finding Aid designed to provide visual access to photographs at archives.

The projects in the Northwest Territories involved dissemination of tourism information to the travelling public on the Mackenzie Highway at the NWT-Alberta border, and at Coni-bear Park, Fort Smith and improvement of the Visitors Information Centre at Fort Smith. Campground improvement and enhancement was carried out at Fort Simpson.

Plans for 1981-82

The CGOT, under the 1981 Summer Canada Student Employment Program, will ask the Canada Employment and Immigration Commission for \$24 012 to cover one project requiring seven jobs or 126 work weeks of employment. This project will comprise an archaeological dig at the site of the "Northern Commercial Company Store" in Dawson City. ■

Department of Justice

JUST

Responsibilities

The Minister of Justice appoints judges to the Territorial Supreme Courts while the department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the Criminal Code, other federal statutes and territorial ordinances. The department shares the costs in the territories of legal aid, native courtworker program and compensation to victims of violent crimes.

Review 1980-81

A civil litigation lawyer was added to the Yellowknife office to provide legal support to federal departments in the Northwest Territories.

Payments totalling \$424 611 were made to the Northwest Territories, including \$254 698 for legal aid, \$11 913 for compensation to victims of violent crimes, and \$158 000 for native courtworker services.

The consolidation of legal services under the aegis of the Northwest Territories Legal Services Board continued during the year. The native courtworker services in the Northwest Territories also comes under the jurisdiction of the Legal Services Board.

Payments totalling \$101 956 were made to the Yukon Territory, including \$51 184 for legal aid, \$7 422 for compensation to victims of violent crimes, and \$43 350 for native courtworker services.

Plans for 1981-82

During 1981-82 it is anticipated that review of the operation of the major cost shared programs will continue and that new cost sharing arrangements for legal aid and compensation for victims of violent crime will be concluded. ■

Responsibilities

Labour Canada administers the Canada Labour Code and is responsible in the federal jurisdiction for industrial standards (conditions of work, minimum wages, hours of work); health and safety of employees; and industrial relations (collective bargaining, labour-management relations).

Employees or employers in any works or businesses of an interprovincial, national or international nature are in the jurisdiction of Labour Canada.

The department maintains offices in major centres across Canada. These offices have primary responsibility for implementation of departmental programs.

The department works with all parties in labour affairs, helping to pinpoint and analyse issues and problems.

Mediation and Conciliation Services

The Mediation and Conciliation Branch, with officers, commissioners, boards, mediators and industrial relations consultants, provides third-party assistance in the federal jurisdiction (including territorial jurisdiction) to industrial disputes.

This covers collective bargaining breakdowns and other such labour-management problems.

Review 1980-81

During the fiscal year, 25 collective bargaining disputes affecting territorial employees were handled by the service. Of this total, 18 collective bargaining disputes were resolved through conciliation or post-conciliation negotiations, leaving seven pending at fiscal year end. The disputes involved companies engaged in mining, rail and water transportation, construction and municipal services.

Arbitration Services

The branch plays a role in disputes arising over the interpretation, application or alleged violation of provisions of collective agreements. When the Minister is asked to intervene in a dispute, Arbitration Services studies the request, determines its validity, and gathers all necessary additional information to recommend appropriate action.

During fiscal year 1980-81, no requests were received from the North for ministerial appointments of arbitrators.

Mountain Region

A Labour Canada office has been in operation in Whitehorse, YT, since August 2, 1978, to serve both Yukon and Northwest Territories. The office activities are supplemented by staff from Vancouver and Edmonton as required.

Review 1980-81

During the fiscal year 13 complaint inspections — nine in the Northwest Territories and four in Yukon — were carried out by the labour affairs officer from Whitehorse under the Fair Wages and Hours of Labour Act. Wage adjustments were collected from four contractors as a result of these inspections. Violations were corrected and \$2 973 was recovered for three employees in Yukon and \$10 500 for two employees in the Northwest Territories. Additional inspections involving northern contracts were conducted at contractor's head offices in Vancouver, Edmonton and Calgary.

Annual construction wage surveys were conducted in the Northwest Territories and Yukon to provide wage data sufficient to establish prevailing wage rates for inclusion in Labour Conditions Schedules for federal government contracts. These prevailing wage rates were made available to the Yukon Territory Labour Standards Branch and Contracts Tendering Department.

Part III

Responsibilities

The provisions of Part III of the Canada Labour Code (labour standards) do not apply to a work, undertaking or business of a local or private nature in Yukon or the Northwest Territories. They do apply to those businesses or undertakings that normally come under federal jurisdiction as in the provinces.

Review 1980-81

During 1980-81, 34 complaints were investigated under Part III of the Canada Labour Code, 19 in Yukon and 15 in the Northwest Territories. As a result of these investigations, \$7 897 was recovered for eight employees in Yukon and \$3 816 for three employees in the Northwest Territories.

A number of complaints from persons employed by companies in the territories were resolved by investigations conducted at the company head offices in Vancouver, Edmonton, and Calgary.

In the same period there were 12 routine inspections carried out in Yukon Territory and four in the Northwest Territories. These investigations resulted in \$1 553 being recovered for three employees.

Part IV

Responsibilities

The long term objective in the territories is the implementation of a comprehensive employment safety program covering employees subject to Part IV of the Canada Labour Code (safety of employees). This also covers the employees in the Public Service of Canada who are covered by the Treasury Board Occupational Health and Safety Policy. Under Part IV, the department ensures that employers maintain safe and healthy working environments in federal works, undertakings and businesses. In the federal Public Service, the department is the Treasury Board agent in assisting in the development and improvement of safety programs. It also monitors existing programs in accordance with the Occupational Health and Safety policies of Treasury Board.

Review 1980-81

During the fiscal year, 32 safety visits involving complaints, inspections, surveys, safety audit program development and accident investigations, were undertaken in the Northwest Territories. Covered were: banks, highway transport, telephone industry, Northern Canada Power Commission, Post Office, Parks Canada, airlines, Transport Canada, transportation, Indian Affairs and Northern Development, Health and Welfare.

In April, 1980, the principal claims officer from Labour Canada's Compensation Division and the labour affairs officer from Whitehorse conducted safety and compensation seminars at five Northwest Territories locations. These information seminars were for federal departments, agencies and Crown corporations whose employees are covered under the Government Employees Compensation Act, Treasury Board Occupational Health and Safety Regulations, and Part IV of the Canada Labour Code.

During May the labour affairs officer from Whitehorse carried out a liaison role for the Duke of Edinburgh's fifth Commonwealth Study Conference by escorting a 17- person study group to four locations in Yukon. The study groups had representation from industry, labour, and government with six Canadians and 11 representatives from various Commonwealth countries. The study conference tour exposed leaders in industry, labour and government to the decision-making process of an industrialized society and the good and bad effects of those decisions on the Canadian population.

During August and September organizational meetings were held with various organizations in both territories to find candidates to attend the first National Women in Trades Conference sponsored by Labour Canada in Winnipeg, Manitoba. Six delegates from Yukon and five from the Northwest Territories attended the conference September 26, 27, and 28, 1980.

New formal agreements were concluded with Yukon and Northwest Territories during 1980 whereby they will conduct technical inspections in connection with boiler, pressure vessel and elevating devices in federal buildings on behalf of Labour Canada. During 1980-81, the following technical inspections were undertaken: boilers and pressure vessels, 66; elevating devices, one.

Accident Compensation

The total accident compensation claims processed in the Northwest Territories to the end of March, 1981, were 278 and in Yukon Territory were 138.

Plans for 1981-82

The office in the territories will continue the promotion and establishment of safety committees in both the private sector in federal jurisdiction and in the public sector.

Legislative Analysis Division

The Legislative Analysis Division collects and analyses Canadian legislation affecting employer-employee relations and the work environment. Legislative developments pertaining to occupational safety and health, workers' compensation and employment standards adopted in Yukon and Northwest Territories as well as federal legislation applicable in the territories are covered in the division's publications. An annual report is prepared for the Canadian Association of Administrators of Labour Legislation (CAALL) which brings together representatives of the federal and provincial departments of labour and representatives from both territories. Finally, the division provided to the Government of the Yukon Territory comparative analysis of the legislation pertaining to safety committees safety representatives and minimum conditions of employment in the various jurisdictions.

Employment Relations and Conditions of Work

Labour Canada's Financial Assistance Program for Labour Education seeks to encourage a better informed union membership and smoother collective bargaining, help labour participate more fully and knowledgeably in social and economic affairs, and to achieve a more equitable distribution of educational expenditures.

During 1980-81 only one application was received from the North for a labour education grant. As a result \$482 was granted to the Northwest Territories Teachers' Association to help defray the cost of an Orientation and Bargaining Seminar in which 25 of its members participated in discussions on consultation procedures, grievance procedures, collective bargaining, education ordinance, labour ordinance and certification regulations.

Labour Data Branch

The Labour Data Branch carries out an annual survey of wages, salaries and conditions of work in establishments with 10 or more employees. The October 1, 1980, survey included 100 establishments in Yukon Territory and 53 in the Northwest Territories.

Information on work stoppages due to strikes and lock-outs in the two territories is maintained. In 1980, one work stoppage was reported involving 240 workers and time loss of 800 person-days.

The branch maintains a file of collective agreements, including 67 agreements covering 8 363 employees in the territories. ■

Department of National Defence

DND

Responsibilities

The Department of National Defence safeguards the sovereignty and independence of Canada. In the North, the department protects Canada against threats and challenges to its territory and contributes to security arrangements in concert with allies in North America and NATO.

DND supplements and supports civil departments and agencies of government in the North, while playing its part in the promotion of national development aims. DND provides the means necessary for reinforcing Canada's jurisdiction in the area, under national and international law.

Review 1980-81

Personnel Activities

Recruiting teams from Vancouver, Edmonton, and Winnipeg gave employment and career briefings in 20 communities in Yukon and the Northwest Territories to ensure that northern residents are aware of training and employment opportunities in the Canadian Forces. Visits were to Watson Lake, Whitehorse, Carmacks, Faro, Mayo, Teslin, Haines Junction, Dawson, Fort Smith, Hay River, Yellowknife, Holman, Coppermine, Cambridge Bay, Norman Wells, Fort Simpson, Inuvik, Eskimo Point, Rankin Inlet, and Baker Lake. Fifteen native people applied for enrolment in the Canadian Forces and six were enrolled. One was subsequently released.

With personnel and financial support from the Department of Indian Affairs and Northern Development, Inuit parents from



Levi Nungaq and wife Alicia from Resolute, accompanied by their daughter Annie from Ottawa, attend their son Johnny's recruit graduation parade ceremonies at Canadian Forces Recruit School, Cornwallis, Nova Scotia.

solute and Igloodik attended graduation ceremonies for their
ns at the Canadian Forces Recruit School, Cornwallis, Nova
otia.

The Canadian Forces School of Aerospace and Ordnance
ngineering at Canadian Forces Base Borden, Ontario,
nducted an annual seven-month course in aircraft
mechanics for native northerners. These natives are
sequently employed by aircraft companies operating in the
rth.

Arctic Forces

us aircraft flew approximately 300 hours on Northern
trols (NORPATs) in the arctic in 1980-81. In addition, the
rora flew its first NORPAT in September and finished the
ar with approximately 50 hours in the arctic. The conversion
cess from the Argus to the Aurora accounts for the low
al NORPAT hours for the year. The NORPATs were scheduled
operations out of Frobisher Bay, Yellowknife and Thule,
eenland. In addition to fulfilling their primary role of
vereignty surveillance, these patrols also supported the
dividual requirements of various government agencies.
uring the ice season, Transport Canada observers were on
e patrols for ice reconnaissance. Other tasks included
otography for the Department of Indian Affairs and Northern
velopment and the Department of Fisheries and Oceans
d investigation of off-shore oil exploration and drilling
tivity on the archipelago. Scientists and observers from
ner government departments were transported.

Mobile Forces

uring the 1970s, Mobile Command developed an extensive
ining program to increase the command's ability to concen-
te forces anywhere in the North during any season while
ercising Canadian sovereignty in the North. The result of
is decade of training was the formulation of the Mobile
ommand Arctic Training Plan 1980-85. The plan emphasizes
e development of skills, experience, procedures and
uipment needed to permit Mobile Command mechanized
d helicopter forces to move tactically throughout the arctic.
e plan encompasses four interrelated programs; Exercise
vereign Viking, the Scientific Research Support Program,
e Arctic Technology Monitoring Program, and the Mobile
ommand Arctic Operational Training Handbook.

In May and June, 1980, Mobile Command's Special Service
orce deployed seven company-sized units to locations from
ambridge Bay on Victoria Island in the west, to Frobisher
y on Baffin Island, in the east.

Two Mobile Command formations conducted reconnais-
nce exercises for senior officers. This covered large portions
the North and involved meetings and briefings at various
mmunities. One exercise was conducted in October, 1980,
d the other in March, 1981.

The first serial of Exercise *Sovereign Viking* deployed to
e Point on Melville Island in February, 1981. During this two-
onth long exercise, four company-sized patrols operated out
the main camp in Rae Point.

As part of the Scientific Research Support Program,
ientists from Trent University, Peterborough, took part in
ercise *Sovereign Viking* to carry out studies on ice and
sh water in the arctic.

Air Forces

Air Transport Group Hercules aircraft provided weekly service
flights, in addition to special flights, to support the Canadian
Forces Communications Stations at Inuvik and Alert. During
the year some 377 080 kg of general cargo were airlifted to
Inuvik and 907 478 kg of construction material and general
cargo to Alert.

Annual Boxtop Operations were conducted in April and
November, 1980. A total of 487 072 kg of general stores,
4 065 455 L of diesel fuel and 73 193 L of JP4 were airlifted
from Thule AFB, Greenland, to CFS Alert. The Boeing 707 air-
craft was used again in a mini-Boxtop operation in February,
1981, to airlift 60 328 kg of construction material to Thule for
onward positioning to Alert via Hercules aircraft.

During 1980-81, Hercules and Buffalo aircraft flew airlift
support for various Mobile Command exercises in the high
arctic, eastern arctic and Melville Island areas.

Helicopters from 10 Tactical Air Group supported mapping
and charting exercises during *Op Yukon*, conducted through-
out Yukon. A total of 755 hours were expended in support of
mapping and charting. Another 267 hours were expended in
training and national development exercises in the high arctic.

Unlike previous years, there were no Hercules or Buffalo
aircraft missions flown in support of northern airfield
construction.

The 440 Squadron detachment at Yellowknife, NWT, was
used for communications and search and rescue flights
throughout the North.

The Distant Early Warning (DEW) Line, consisting of four
main sites and 17 auxiliary sites, continues to provide a
military presence in the arctic. These military installations
stretch from Cape Dyer on the east coast of Baffin Island to
Komakuk Beach near the Alaskan border. While all sites are
operated by civilians under United States Air Force contract,
there are Canadian Forces members at the main sites, and the
airfields at Tuktoyaktuk, Hall Beach, and Cambridge Bay are
operated by Transport Canada.

Air Reserve activities in the North during 1980-81 included
flights in the area of Baffin Island-Frobisher Bay for mapping
and charting surveys and transporting militia personnel and
cargo to various sites throughout the central arctic. Air
Reserve personnel transported passengers and equipment for
440 Sqn detachment at Yellowknife. ARAF personnel partici-
pated in Exercise Boxtop and provided personnel support to
CFS Alert.

Military Engineering

The last of six airfields to be built under the 1974
Memorandum of Understanding between the Ministry of
Transport and Department of National Defence has been
completed at Spence Bay. In anticipation of a 1981 start on
construction of an airfield at Gjoa Haven, DND pre-positioned
fuel caches, and relocated construction equipment and camp
facilities. However, the project was cancelled by Transport
Canada at the request of the Government of the Northwest
Territories in favour of construction by a private contractor.
Transport Canada does not expect further DND involvement in
the airfield program until after 1984.

The rehabilitation of Canadian Forces Station Alert, under the supervision of 1 Construction Engineering United, Winnipeg, continued in 1980 with construction of the operations building and a road to Mount Turnbull. Projects included crushing of gravel for the runway, installation of a POL pipeline from the airfield to the main camp, and installation of an illuminated parking apron.

Engineering assistance was provided to Project Hurricane on Ellesmere Island and at Frobisher Bay, and to Mobile Command on northern navigation equipment trials.

The Mapping and Charting Establishment (MCE) surveyed 36 000 km² in the St. Elias Mountains of Yukon and northern British Columbia. Approximately 35 survey and support personnel and aircrew were deployed, together with four aircraft, operating from a base camp on the Haines Road at Blanchard River. Survey by Doppler satellite and conventional methods established a network of control required for the eventual production of 1:50 000 scale maps of the area. Two MCE surveyors field checked 51 1:250 000 scale maps of the arctic archipelago and northern mainland, with support from one Twin Otter aircraft.

Plans for 1981-82

Personnel Activities

Recruiting teams will continue to give military employment and career briefings in northern communities.

A tour of military training facilities will be offered to native northerners from the Inuvik Region, NWT, and from Labrador.

A special aircraft mechanics training course for native northerners will be carried out.

Maritime Forces

Tentative plans are being made for northern deployment of an operational support ship and a diving support ship during the summer, 1982.

Maritime air activity for 1981-82, consisting of sovereignty and surveillance patrols, will increase to approximately 400 hours as the conversion process to the Aurora progresses. Support to other government agencies will continue.

Land Forces

A second serial of Exercise *Sovereign Viking* will take place from August to October, 1981, on Cornwallis Island, Northwest Territories. Personnel from 2 PPCLI, Winnipeg, and 408 Helicopter Squadron, Edmonton, will take part. Three universities will participate. The University of Windsor will conduct studies on fresh water plankton and water analysis. The University of Newfoundland will conduct studies on arctic fish species and the occurrence of pollutants in arctic waters. Laval University will study geomorphology and vegetation on Cornwallis Island.

Mobile Command will continue to conduct reconnaissance exercises in the North in 1981 through *Holly* and *Palais Royal*, conducted by 1 Canadian Brigade Group, Calgary, and 5 Groupement Brigade du Canada, Valcartier. An additional serial of Exercise *Sovereign Viking* is planned for March and April, 1982, on Prince Patrick Island.

Air Forces

Hercules aircraft will continue to provide regularly scheduled service to Alert, Inuvik, Yellowknife and Whitehorse. Hercules aircraft will be used during the spring, summer and early fall to support the supply of Alert and various land forces exercises in the North. Hercules and helicopter aircraft will be used to support mapping and charting activity in the high arctic. The *Snowbirds*, 431 Air Demonstration Squadron, will conduct its annual tour of Canada's North in May, 1981. Performances will be given at Whitehorse and Watson Lake in Yukon, and Hay River and Yellowknife in the Northwest Territories. The *Snowbirds* will also be seen in Fort Simpson while enroute to Hay River. Air Reserve plans for the next year include training exercises and flying services to Northern Region Headquarters.

Military Engineering

Military Engineering activity in Northern Canada will be curtailed during 1981 due to the heavy demand placed on CF engineer resources.

The heating system in the operations building at Inuvik will be replaced and the AES Tank Farm at CFS Alert, will be relocated.

The implementation of Project Hurricane will involve a considerable percentage of engineering input including the establishment of the trailer camp at Eureka, installations of antennae bases and the construction of a powerline.

The Mapping and Charting Establishment will conduct a major operation on northern Baffin Island using air support and Doppler satellite survey techniques to complete the 1:50 000 mapping coverage of Baffin Island.

Research and Development

Responsibilities

The Research and Development Branch formulates and implements departmental scientific policy and controls and manages the R&D program of the department. The branch ensures availability of a technology base capable of providing the knowledge and experience to solve scientific and technological problems related to departmental operations and equipment. Research is undertaken on projects aimed at acquiring knowledge relevant to military operations in the North and testing and evaluating equipment and systems proposed for use in arctic or other harsh environments.

Review 1980-81

The internal R&D program of the department was conducted in its six research establishments. Five of these establishments were involved, to some degree, in research related to northern activities. In addition, a number of research contracts were awarded to Canadian universities and industries.

The Defence Research Establishment Pacific (DREP) was engaged in research directed towards the development of effective methods for submarine detection in arctic waters. Activity in the North in 1980 included a large expedition to Nansen Sound in April. Camps were located on the ice plug at the mouth of Nansen Sound and on the smaller Fjeldholmen island. This experiment was conducted in cooperation with our U.S. laboratories which had established camps on drifting ice floes in the polar pack as far away as the North Pole. In the late summer, 1980, a party of DREP scientists on the Canadian Coast Guard icebreaker CCGS *J.A. MacDonald* carried out oceanographic measurements in Barrow Strait and Jones Sound and a DREP camp was established on the islets at the mouth of Frise Fjord to allow for data collection on a year-round basis. DREP and the University of Victoria carried out a series of measurements in the Assistance Bay area, near Resolute Bay, to investigate the effect of the shoreline on electromagnetic activity.

In 1976 the Defence Research Establishment Valcartier (DREV) initiated an environmental test series to qualify the RV7 rocket weapon for use in a diverse climatic environment. The arctic climate tests are being carried out at Canadian Forces Base (CFB) Alert, where test rocket motors are stored and withdrawn for shipment after various periods of arctic exposure. The tests involve delivery of rockets to Alert, monitoring the thermal environment experienced in the storage area, and cycling the rocket motors through other climatic conditions. No firings of rocket engines are planned at Alert. DREV is providing support to the Department of the Environment search for suitable oil disposal methods applicable to its Arctic Marine Oilspill Program. Experiments were conducted in McKinley Bay in June, 1980, and a model selected for technology transfer.

Scientists in the Protective Sciences Division of the Defence Research Establishment, Ottawa, (DREO) research clothing and protective equipment required for use in harsh conditions. During 1980-81, research activities included basic studies of heat and vapour transport in insulation; distribution of insulation within sleeping ensembles; the design and testing of face masks for use in cold windy conditions; and the start of research projects related to the "architecture" of tents and the design of inflatable structures. Face mask activities and a familiarization with northern mechanized operations of the Canadian Forces were carried out by DREO scientists during Exercise *Sovereign Viking* conducted on Melville Island. Information on battery problems experienced by military personnel in the North was obtained during this exercise. User comments are expected to indicate longer operational life for batteries. The evaluation of high density primary batteries for a number of military applications continued. During the past year DREO participated in the design and evaluation of batteries for a radar transponder and a high frequency man-pack radio. Fifty prototype batteries were built under contract by Duracell for evaluation in military use in the North. Another thium-sulphur dioxide battery was designed by DREO for laboratory evaluation and field trials. Similar batteries were used in field trials of the AN/PRC 77 and returned to DREO for evaluation. DREO support continued on project activities concerned with satellite communications to Eureka and points further north.



Peter Kipsigak from Igloolik attends his son's (AIMIE) recruit graduation parade ceremonies at Canadian Forces Recruit School, Cornwallis, Nova Scotia.

Scientists in the Preventive Medicine Section of the Defence Research Establishment Suffield (DRES) completed a three-year survey of respiratory disease patterns occurring at CFB Alert. During the period of the survey, clinical respiratory disease incidence was extremely low, although evidence of higher levels of sub-clinical infection was noted. It was concluded that respiratory infectious disease is a minimal problem at Alert. The Military Engineering Section of DRES has an ongoing contract with the Department of Civil Engineering at the University of Alberta to conduct research in northern geotechnical engineering of specific interest to the Canadian Forces. Work over the past year centred on experimental investigations into the vibratory driving of ground anchors and piles in permafrost. In a separate contract with the University of Alberta, DRES sponsored work on the demolition of ice sheets, the experimental phase of which was carried out in the Chilcotin Lakes in January, 1980. A variety of research activities related to the mobility of military land vehicles in the North are being pursued under contract. Carleton and McGill Universities are investigating the mechanics of terrain-vehicle interactions with particular reference to snow and muskeg. McGill and the University of British Columbia are conducting terrain studies in the Richardson Mountains, Caribou Hills and Churchill regions. Remote sensing imagery, both airborne and satellite, is being evaluated. Studies are also being directed toward the definition and resolution of problems associated with the operation of military vehicles in cold regions.

Scientists at the Defence and Civil Institute of Environmental Medicine (DCIEM) are concerned with research aimed at enhancing the protection and performance of military personnel. DCIEM activities include programs on human responses to stress, physical fitness, aerospace life support systems, infection and immunity and deep diving. Tasks include behavioral and bioscience investigations. During 1980-81, DCIEM continued to study the physiological impact of exposure to cold environments. Extensive use was made of infrared thermography to study human heat loss in cold water and of the cold wind facility to study discrepancies between observed physiological responses and those predicted. Other studies indicate that personnel who are physically active prior to immersion in cold water lose body heat significantly faster than personnel who were inactive. A study on injuries due to cold (frost bite) has been initiated.

Plans for 1981-82

The 1981 arctic season will involve field parties working from the DREP camp at Nansen Sound in April, a major operation in Jones Sound in the later summer, and small field parties working from DREP camps at Nansen Sound, Barrow Strait and Jones Sound in late September. The operation in Jones Sound, which will be carried out from CCGS *J.A. MacDonald*, will consist of further oceanographic measurements and measurements of geomagnetic activity. A new DREP camp will be set up on the beach near Cape Herve, at the western end of Jones Sound. The geometric micropulsation monitor at Resolute Bay will be upgraded.

The CRV-7 environmental test series at DREV, involving CFS Alert, will extend into 1986. Tests of preproduction incendiary devices developed by DREV for the Department of the Environment's Arctic Marine Oilspill Program are to be conducted at Pond Inlet, Baffin Island, during the summer, 1981. The Canadian Forces have requested the development of a smoke marker for use in military search and rescue operations and in low altitude parachute extraction operations in the northern arctic environment.

The geotechnical engineering investigations, sponsored by DRES at the University of Alberta, are almost completed. A decision will be made shortly as to whether to continue the work into a field demonstration phase. Field demonstration of vibratory techniques for placing ground anchors would be fairly easy to mount but a field demonstration or verification of the ability to predict the behaviour of an underground cavern would involve the costly construction of such a cavern. Additional work on ice sheet demolition is being contemplated.

Research activities at DREO on clothing and protective equipment for use in harsh environmental conditions will continue. In addition, new methods will be developed at DREO for testing the physiological protection provided by clothing intended for use in the arctic. Prototype lithium-sulphur dioxide batteries, designed at DREO, will be built under contract and will be evaluated in the laboratory and on field trials.

Research activities will continue at DCIEM on enhanced protection and performance of military personnel. Reports will be completed shortly on the studies of the physiological impact of exposure to cold. Production of the WCI meter developed at DCIEM is anticipated under a technology transfer contract with industry.

Research Contracts 1980-81

Control Data Canada Ltd., Ottawa: Development and evaluation of algorithms required for acoustic detection systems in the Canadian Arctic (DREP).

University of Victoria: Electromagnetic modelling and field station studies of the coast effect in bays (DREP); Model study of the effects of surface motion in acoustic signals scattered by a rough surface (DREP).

Applied Microsystems Ltd., Victoria: Development of a submersible low power digital tape recorder for remote data acquisition and storage (DREP).

Barrodale Computing Services, Victoria: Field data retrieval, editing and display systems (DREP).

Duracell Canada Ltd.; Military lithium-sulphur dioxide primary battery (DREO).

University of Alberta: Geotechnical military engineering in the arctic (DRES); Study of respiratory viral disease at CFB Comox and CFB Alert (DRES).

Carleton University: Development of a method for predicting off-road performance of tracked vehicles (DRES). ■

Responsibilities

Under the National Energy Board Act of 1959 and subsequent amendments, the board has two principal roles: to regulate specific areas of the oil, gas, and electrical utility industries in the public interest, and to advise the government on the development and use of energy resources.

The board is a regulatory body granting, with the approval of the Governor-in-Council, certificates of public convenience and necessity for the construction or operation of interprovincial and international petroleum pipelines and international electric power lines. It issues licences authorizing the export or import of gas and oil or the export of power. The board issues safety orders for pipelines, regulates the rates, tolls, and tariffs charged by the oil and gas pipeline companies under the board's jurisdiction, and approves of pipeline utility crossings.

In its advisory role, the board may hold inquiries into particular aspects of the energy situation and prepare reports for government, Parliament, and the public. The board also carries out studies and prepares reports at the request of the Minister of Energy, Mines and Resources.

In addition, the board administers certain provisions of The Petroleum Administration Act. This Act, passed June 19, 1975, empowers the federal government to impose a charge on the export of crude oil and certain petroleum products; to provide compensation for certain petroleum costs; and to regulate the price of Canadian crude oil and natural gas in interprovincial and export trade.

Responsibilities under the Northern Pipeline Act

The Northern Pipeline Act, passed on April 12, 1978, provided the authority for the construction of the natural gas pipeline in Canada along the Alaska Highway, as well as for the creation of a Northern Pipeline Agency to oversee the construction of the pipeline. Certain terms and conditions in the legislation require the company to seek approval of the board and the Minister responsible for the Northern Pipeline Act.

The board's responsibilities relate mainly to the incentive rate of return schemes, financing and tariffs and the granting of "leave to open" orders. In addition, the Northern Pipeline Agency seeks assistance from the board on engineering design and on environmental and socio-economic matters.

Review 1980-81

Public Hearings

During 1980, the board conducted all or part of 21 public hearings in locations from St. John's, Newfoundland, to Victoria, British Columbia. It sat for a total of 155 days.

The following are highlights of some of these hearings.

By the beginning of 1980, the board had completed three phases of its four-phase hearing on the financing of the Canadian sections of the Alaska Highway Natural Gas Pipeline System. These were reported upon in the 1979 Annual Report.

On March 11, 1980, the board issued its Findings on Phase IV (a) which dealt with the feasibility of financing the "prebuild" in Canada and the United States and the financing of the whole mainline.

Following the release of the Phase IV (a) Findings the board convened a hearing on April 29, 1980, to provide Foothills Pipe Lines (Yukon) Ltd. with an opportunity to comply with the requirements of the amended condition 12 (1) of Schedule III to the Northern Pipeline Act. This required the company to establish, to the satisfaction of the Minister, that financing had been obtained for the "prebuild" facilities and could be obtained for the rest of the mainline in Canada. As a result of the hearing the board issued a statement indicating that no insurmountable financing issues in Canada had been identified, but that there were four issues, primarily related to United States matters, which had to be resolved. The issues related to the need for credit-worthy parties to be willing to pay for the transmission of Alaska gas, to the tracking or flow-through of the tariff in the United States, to the adequacy of the volume of gas to be transmitted in prebuilt facilities, and to the minimum payment for gas imported into the United States authorized by the United States Federal Energy Regulatory Commission. Foothills (Yukon) indicated that it was satisfied in relation to all of these matters and was willing to proceed to finance and construct the pipeline.

On completion of the Phase IV (b) hearing, which commenced May 5, 1980, the board approved a full cost-of-service tariff for the mainline, amended the Incentive Rate of Return Scheme and approved a number of other tariff matters.

As a result of that hearing, the hearing dealing with condition 12 of the Northern Pipeline Act, and a related hearing dealing with an application by Pan-Alberta to export additional gas volumes through the system, the federal government approved construction of the southern portions of the system.

In December, 1979, the board authorized new exports totalling 106.2 billion cubic metres of natural gas to the United States. Approximately 51 billion cubic metres of this total were licensed to Pan-Alberta Gas Ltd. for export through the "prebuild" of the Alaska Highway Natural Gas System.

In April, 1980, the board authorized an additional 14 billion cubic metres of gas for export by Pan-Alberta through the pre-build. The Pan-Alberta export licence, coupled with the approval by the board of an amendment to a licence held by Consolidated Natural Gas Company Limited to permit the export of some five billion cubic metres of natural gas through the prebuild, were critical to the board's determinations in its condition 12 hearing.

In April, 1979, Trans Mountain Pipe Line Company Ltd. applied for a certificate authorizing the construction and operation of a pipeline to transport Alaskan crude oil from the west coast to Edmonton, Alberta, for trans-shipment to the northern part of the United States. In January, 1980, following a public hearing, the board released its Reasons for Decision on the application, stating that it was satisfied on all matters related to the construction and operation of the section of

pipeline in Canada. However, in the absence of any studies on the degree of potential impact of the U.S. part of the project, and the associated tanker traffic upon the marine and coastal environment in Canada, the board concluded that there was insufficient evidence to assess the acceptability of the environmental risks to Canada and, therefore, was not prepared to issue a certificate. In its decision, the board required Trans Mountain to advise whether it wished to proceed with a rehearing. Trans Mountain did so and the application was set down for further hearings in Vancouver, in November, 1980. These hearings continued into 1981.

In March, the board received an application from Inter-provincial Pipe Line (NW) Ltd. for a certificate of public convenience and necessity to construct an oil pipeline 866 km in length from Norman Wells, NWT, to Zama, Alberta. The board held a public hearing on the application in Edmonton and Yellowknife in the fall of 1980. A decision will be rendered in 1981.

Hearings — Applications Pending

The board received an application from Arctic Pilot Project Inc. for a licence under Part VI of the act to export natural gas from Canada. The company is owned by Petro-Canada Exploration Inc., NOVA, Dome Petroleum Limited and Melville Shipping Limited. The applicant proposes to liquefy natural gas at Melville Island in the Canadian arctic and to transport the liquid by ice-breaking LNG carriers to a receiving terminal, in Quebec or the Maritimes, for regasification and subsequent export to the United States. The requested licence is for the period November 1, 1983, to December 31, 2005, and would also include some exports of natural gas from conventional sources in western Canada.

In a related matter, the board received an application from TransCanada PipeLines Limited for a certificate of public convenience and necessity under Part III of the act for the construction of an LNG receiving terminal at Gros Cacouna, Quebec, or Melford Point, Strait of Canso, Nova Scotia.

Pursuant to Section 22 (2) of the National Energy Board Act, the board will prepare a report to the Minister of Energy, Mines and Resources on behalf of the Minister of Indian Affairs and Northern Development respecting the proposed Arctic Pilot Project on and adjacent to Melville Island. It will cover such facilities as pipeline, liquefaction plant, liquid natural gas storage and ship loading facilities.

It is expected that the board will hold public hearings on the inquiry, the exports and southern facilities applications in 1981. ■

National Film Board

NFB

Responsibilities

The National Film Board produces motion pictures, film loops, filmstrips, slide sets and still photo exhibits about the Canadian North, its peoples and their activities, its industries, resources, and institutions. It distributes these materials in Canada and abroad. NFB also distributes materials interpreting Canada and explores issues of national interest in the North.

The National Film Board services the Canadian arctic from its Quebec, Ottawa, Prairie and B.C. offices. The NFB seeks to expand the northern audience through increasing the number of prints and outlets available, and by improving the quality and effectiveness of its distribution.

Review 1980-81

The board maintained its relationship with the Nunatsiakmiut Society of Frobisher Bay and provided administrative, financial, technical and training services. Included was the transfer of Super 8 film material to video for editing by Nunatsiakmiut in Frobisher Bay for telecast by CBC Northern Service. Training programs were given in Frobisher Bay by NFB personnel and private consultants.

During the year, the NFB continued a training program for PIC - TV personnel in Pond Inlet, where local telecasts have been made since 1978. The program was carried out both in Pond Inlet and at the Film Board in Montreal.

The NFB expanded its program to Cree communities in the James Bay region to establish a communications network for the scattered settlements in the area. During the year, the board helped the Lake Mistassini Communications Society gain approval for a radio-TV facility and produce their first 16 mm film.

The board expanded its assistance by way of a Northern Support Project. Taqramiut Nipingat of Sugluk, Quebec, with assistance from DIAND and the board, began Inuktitut versions of NFB films for telecast to Northern Quebec via Anik B satellite. It is hoped that this program can be expanded to other areas of the North in conjunction with Inukshuk, the pilot Inuit television network. It is expected the board will be able to provide an increased number of NFB titles in Inuktitut in future based on the versions program carried out by Taqramiut Nipingat.

During the year, the board began assistance to the Algonquin Council of Quebec. It participated in seminars aimed at launching a comprehensive communications program and assisted the council with production of slide shows, printed media material, and plans for future film adaptations.

In 1980 the Film Board released *The Fiddlers of James Bay* which was telecast on the National CBC network. The film won a certificate of merit at the Cork Film Festival in Ireland. NFB Atlantic Regional Studio completed research for a possible film called *Two Arctic Peters* which would deal with Peter Ittinuar, Federal Inuit MP, and Peter Freuchen, Danish explorer and writer. A film nearing completion is *Bush Pilot*, which tells the story of a bush pilot and a young Inuit girl who survive a crash landing in the wilderness. NFB Multi-Media Studio has released two slide sets, *Whaling in the Canadian Arctic* and *La Chasse à la baleine dans l'arctique canadien* under the series *Canada's Visual History*. Two additional slide sets from this series are in production, *Arctic Prehistory* and *The Copper Eskimo*.

The Ontario Regional Studio is producing a documentary, *Magic in the Sky* which will examine how television has changed Inuit communities in the Canadian arctic and document the Inuit's work to create their own TV network.

The Multi-Media Studio has two sound filmstrips in production under the Creative Canadians Series, *Peter Pitseolak: Image Maker* and its Inuktitut version *Peter Pitseolak: The Man Who Made Pictures*. This version is being produced with funding from the NFB's Northern Support Project and cooperation of the West Baffin Island Cooperative and the Education Programs of the Department of Education, Government of the Northwest Territories.

Shooting is proceeding on a film entitled *COOP* in the Povungnituk, Ivujivik and Sugluk communities. This two hour film concerns the survival of the Inuit in northern Quebec. Filming is proceeding on a one-hour film in Kluane National Park, Yukon Territory, and a documentary on two Canadian archeologists in the North.

Regional Reports

Quebec

A new outpost catalogue was printed and mailed to film borrowers in the outlying regions of Quebec. The catalogue has been expanded this year to include more than 100 titles produced by the CBC and 167 by NFB. Many additions were suggested by the borrowers themselves.

NFB has been carrying out a distribution project simultaneous to shooting film in the communities of Povungnituk, Ivujivik and Sugluk. Over a period of ten months, a program of some 50 films were screened. Virtually everyone turns out for community centre screenings and each film was seen by some 1 500 people.

The outpost film library handled 1 761 bookings over the year -- an increase of about 1 000 bookings over the past year when fewer films were sent out with the idea that they would be taken from community to community. NFB has determined that more people see films sent to one community and left there for a longer period of time.

National Capital

More than 1 200 bookings were processed from the National Capital Region office for the Baffin Ellesmere regions. These bookings were made to approximately 75 NFB library card holders borrowing on behalf of entire communities.

The Outpost library in Ottawa now contains over 990 NFB and CBC prints.

Fifty-nine titles were previewed for eventual telecast by CBC Northern Services.

Northwest Territories

The Edmonton NFB library serves more than 50 communities in the Mackenzie District of the western NWT, offering its entire inventory of 5 600 prints and more than 2 500 different titles. During 1980-81, more than 1 000 NWT loans were completed from the Edmonton library, an increase of approximately 10 per cent over the previous year. The greatest increase was to users outside the school system. Schools throughout the NWT continued to enjoy increased local access to NFB and other films as a result of the decentralization of the NWT educational film libraries to five NWT centers.

The French cultural association of the NWT continued to use the Edmonton NFB holdings of French language films, booking 100 titles during the period. The Department of Education purchased another 29 French language NFB films for use in schools and by the French cultural association.

A selection of more than 100 NFB titles, on long term loan to the Native Communication Society of the NWT in Yellowknife, continued to be borrowed by Indian organizations in Yellowknife and the communities of the Mackenzie River Valley.

During the past year, the office of the Dene Nation in Yellowknife became an information resource centre for board services, programs and products, serving about two dozen Indian communities in the NWT. A workshop on film and other information resources will be held for representatives of these settlements during the spring.

The Yellowknife Public Library has begun to develop a program of NFB public screenings, the first of which will be held in the spring. The library has also agreed to explore, with five other NWT community libraries, the possibility of hosting public screenings of NFB films in their respective communities during the upcoming fall and winter seasons.

The Department of Education has confirmed its intention to open five regional film libraries to the public in September, 1981, and to negotiate an annual acquisition of NFB productions that will result in more NFB films being accessible to northern film users, both public and educational.

British Columbia

The B.C. office added 120 prints to the 2 700 prints in Prince George, Dawson Creek and Prince Rupert to improve its service to northern B.C. This increased interest in the service and produced a 10 per cent increase over the 17 000 bookings recorded last year.

The Yukon government's A/V service has upgraded the titles in its collection. As a result, 1 200 prints were distributed through its four libraries in the western arctic. The booking statistics have improved by about 5 per cent over the 15 000 recorded last year. A videocassette contract with the Yukon government improved the range of NFB material through the growing use of video equipment in the arctic.

Sponsor Program Office

DIAND supported Inuit organizations via the NFB/Sponsor Program Office to help version NFB films into Inuktitut for use in Inukshuk. DIAND also provided assistance to Memorial University to videotape a play for use on Inukshuk.

DIAND and DOC provided financial support to a half hour documentary on Inukshuk, produced by NFB and Investigative Productions Inc.

DIAND also provided financial support for a 13-part television series by TV Ontario on the North, entitled *North of 60 - An Uncertain Destiny*.

Indian Affairs and Northern Development is sponsoring a series of videotapes on the *Kaminuriak Herd Crisis* for use in the North.

DIAND is also sponsoring the film *Traditional Inuit Games*.

Plans for 1981-82

The Multi-Media Studio is planning a 16mm film series entitled *Idlout's Children*, a contemporary look at arctic Canada through the eyes of four of Idlout's children.

Also under consideration is a coproduction with New Zealand of a series of films on the polar regions and a film comparing the Canadian North to that of other countries. ■

National Museums of Canada

NMC



The Soper River camp, 15 km north of Lake Harbour. The lapis lazuli deposit occurs in the light coloured rocks in the background hills.

Canadian Conservation Institute

Responsibilities

The Canadian Conservation Institute (CCI), of National Museums of Canada strives to help publicly-owned museums, galleries, and archives protect their collections against deterioration. CCI integrates scientific research with applied conservation techniques in its laboratories in Ottawa and operates mobile laboratories across Canada. As well, the institute provides advice on all matters from the care of artifacts to proper environmental conditions within institutions. It offers free lectures, workshops, and seminars.

Review 1980-81

Through the mobile conservation laboratory service, on-site conservation assistance was provided to a number of museums and other cultural institutions both in Yukon and the Northwest Territories. Many artifacts were treated and museum personnel were instructed on the proper care and storage of their collections.

CCI participated in the third annual Yukon Heritage Conference and presented a seminar on basic conservation, care, and handling of museum objects. Scientific examination and conservation of a number of artifacts, recovered from excavations in Yukon and Northwest Territories, were completed. A visit was made to the Yukon Territorial Archives in Whitehorse where objects from the collection were treated and a series of workshops was offered on paper conservation.

Plans for 1981-82

Work on the scientific examination and conservation of artifacts composed of organic materials, recovered from excavations at Dealy Island, will continue at the headquarters laboratory. CCI will continue to advise museum personnel in both Yukon and the Northwest Territories concerning the proper care, handling, display, and storage of their collections.

Museum Assistance Programs

Responsibilities

The Museum Assistance Programs provide financial and technical assistance to Canadian museums and related institutions to preserve and increase public access to the objects and collections which form Canada's natural and cultural heritage. Assistance is available towards renovation and upgrading of facilities, the purchase of equipment, registration of collections, training of museum personnel, preparation, production, and circulation of exhibitions, and special projects.

Review 1980-81

A grant of \$10 000 was provided to the Fort Smith Northern Life Museum and National Exhibition Centre to begin a program of public activities for the population of the region. A grant of \$10 000 was approved to enable the Inuit Cultural Centre to examine the feasibility of establishing a museum of Inuit history at Eskimo Point.

Research was conducted on the problems of the architecture of northern museums and the conservation of their collections.

Plans for 1981-82

A grant of \$30 000 has been committed towards the 1981-82 public programming activities of the Fort Smith Northern Life Museum and Exhibition Centre. The Museum Assistance Programs will continue to offer advice on museum architecture and on the conservation of collections in northern communities.

National Museum of Man

Archeological Survey of Canada

Responsibilities

The Survey undertakes research and rescue archeology pertaining to the prehistoric occupation of Canada.

Review 1980-81

The Rescue Archeology Program, announced the results of field research work undertaken under the auspices of the Northern Yukon Research Programme, University of Toronto at the Bluefish Caves and subsequent laboratory work on the material found. The evidence obtained so far from the Bluefish Caves site indicated that human groups formed an integral part of the northern Yukon uplands eco-system at a time when the continental glacier, 200 km to the east, and glacial lakes, a few kilometers to the north, still influenced the bulk of the eastern Beringian environment. It may be noted that the site represents the oldest in situ, primary archeological and paleontological deposit of its kind ever to be found in this region.

A short assessment survey was undertaken of the placer mining operations in the Dawson gold fields area. This was followed by a brief search for reported outcrops in the Aishihik plateau, to the northeast of Aishihik Lake.

The Yukon Refugium Project undertook two major surveys in the northern Yukon. One of these was an intensive search for undisturbed archeological sites of mid-Wisconsinan age in the Old Crow River valley. The other began on Eagle River at the Dempster highway and focused primarily on geological and paleoecological sampling.

Other Yukon activities included co-sponsorship with other government agencies and various institutes, of a number of assessment survey and excavation projects. R. Gotthardt (University of Toronto) carried out an intensive and successful survey and testing program along segments of the Dempster Highway, in the Rock River area of the Richardson Mountains. Further to the south, in the southern lakes area between Carcross and Teslin, the first season of a major, long-term, inter-disciplinary resource inventory program was developed, under the auspices of the Yukon Territory.

A two-season project of excavation was completed at Brooman Point, Bathurst Island. Ten of the 19 houses at this Thule winter village site were excavated, in hopes that information would be gained on the duration of occupation and number of houses occupied contemporaneously. Although preliminary analysis indicates stylistic uniformity in the artifacts recovered from all houses, suggesting a relatively short period of occupation, there is evidence of two sequential house styles.

Joint rescue archeology projects were carried out by survey and excavation work at Thule localities in the Coronation Gulf area, and brief investigations done at two Dorset sites located along the west shores of Navy Board Inlet, in northwestern Baffin Island.

Plans for 1981-82

Plans for 1981-82 involve a continuation of the Old Crow River survey, as well as return visits to selected Eagle River localities for which samples now under study indicate the likely proximity of archeological deposits. The resource inventory program in Yukon will continue for two more years.

It is hoped that further study at the Bluefish Caves site will make possible a clearer delineation of the range of human activities at the site and provide sufficient diagnostic data to characterize technologically a series of sibylline manifestations that may relate in some ways to Late Pleistocene, mid-continental cultural events.



Comb, Thule culture, Brooman Point, Bathurst Island. National Museum of Man.

Canadian Ethnology Service

Responsibilities

The Canadian Ethnology Service documents the cultural heritage of the aboriginal peoples of Canada. This documentation includes research, collections, analysis, and dissemination of information on the ethnographic, linguistic, and material culture of the Indian, Inuit, and Métis peoples of Yukon and Northwest Territories.

Review 1980-81

Staff research focused on Athapaskan land use, material culture (especially caribou fences, fish traps and attendant housing), Athapaskan-Inuit interrelationships, and changing patterns of Inuit subsistence. Research projects contracted through the Urgent Ethnology Program included: a systematic analysis of the family and kinship network for the Dene community of Fort Liard, Northwest Territories; an ethnobotany of the Chipewyan; ethno-ecology of the Padlermiut in relation to the caribou hunting complex; kinship as a demographic and ecologic integrator among Inuit of the east Baffin Island coast, 1920-1960; social relations among the Ikpiarjungmiut of Arctic Bay; and a study of Inuit musicological culture in the Keewatin District.

Plans for 1981-82

Research will focus on Athapaskan land use and material culture studies and on Inuit material culture and culture change. Field contract research during 1981-82 will focus on linguistic research on the Athapaskan dialect of Dogrib as spoken in Lac La Martre, Northwest Territories, and on the examination of Inuit space-time in Igloodik, Northwest Territories.

National Museum of Natural Sciences

Vertebrate Zoology Division

Responsibilities

The Vertebrate Zoology Division contributes to the knowledge of animal species in Canada through comprehensive faunal surveys, field research programs, the maintenance of important collections, and research in systematics, taxonomy, and zoogeography. The division cooperates with scientists of other government agencies and countries interested in the North.

The Ornithology Section assumes the general responsibilities for research on bird distribution, systematics, and taxonomy. It undertakes short and long term projects, including an analysis of the Canadian bird fauna in comparison to the entire Holarctic ornithofauna.

The Vertebrate Ethnology Section undertakes detailed, long term studies of the behaviour of vertebrates, particularly birds and mammals. During the past 10 years this section carried out studies of the relationships between species of arctic animals and the behavioural adaptations that enable them to survive in high arctic environments. Most of the field research has taken place at the National Museum of Natural Sciences High Arctic Research Station at Polar Bear Pass on Bathurst Island, Northwest Territories.



Larry Titus of the CCI records artifacts during stabilization of Captain Kellett's cache on Dealy Island, Northwest Territories.

Review 1980-81

An ornithological survey of the Yukon Coastal Plain was undertaken from June 12 to July 22, 1980, to obtain information on bird distribution and specimens for a zoogeographic analysis of the bird fauna of Canada. Major habitats in the coastal plain and on the northern slope of the mountain ranges were investigated thoroughly during the period. The researchers travelled from the base camp located at Stokes Point by helicopter, on foot, and by inflatable rubber boat.

A total of 106 species were recorded in the area, some of them for the first time. These constitute important range extensions for species known to breed outside of that part of Yukon, either to the north or the south. Southern species extending their range into the coastal plain were found mainly in the shrubby or wooded habitats of river valleys. Those of a more northern origin were birds of open tundra habitats, such as shorebirds. Most notable was the first documented occurrence in Canada of the Red-throated Pipit (*Anthus cervinus*), a Palearctic species known to nest in North America only in western Alaska.

More than 500 specimens were collected as the basis of forthcoming taxonomic studies. The results of this work will allow a better interpretation of bird distribution in this part of Yukon where elements originating from eastern Eurasia are so numerous.

In Vertebrate Ethology, the program at the High Arctic Research Station was devoted to maintaining the facility and painting the laboratory building. The oldest parcoll hut, erected in May, 1968, was dismantled and returned to Resolute Bay.

A two-day census by helicopter was conducted of the Penny Strait area, and adjacent polynyas. On the small islands checked, all species (common eiders, oldsquaws, loons, and gulls) were nesting, but in smaller numbers than in previous years. Ringed and bearded seals were less abundant but the number of polar bears remained constant for the area. Ross's gull did not nest and only a single pair was present.

Observations on the behaviour of muskoxen were made in Sverdrup Pass, Ellesmere Island, between July 4 and August 1980. Of the total of 25 muskoxen seen in Sverdrup Pass, 12 were subadults, including four yearlings and six calves. Most of these muskoxen remained in two separate herds, which joined together for only two days. More than 4 000 feet of colour movie film were exposed during July documenting muskox behaviour. Behavioural patterns captured on 16 mm film for the first time include: a short dominance fight between bulls, calves play-fighting, initial stages of courtship, and an intensive broadside display between bulls. Sound recordings were made of such muskox vocalizations as bulls roaring, calves and yearlings bawling, bulls snorting.

Plans for 1981-82

This season the High Arctic Research Station will be used as a base for projects conducted elsewhere.

During July a census is proposed at the known breeding places of the rare Ross's gull in the Penny Strait area to record nesting attempts. A similar project, also by helicopter, is planned for southern Ellesmere Island where colonies of ivory gulls occupy and nest on isolated mountain peaks (nunataks) in the ice cap.

A party will return to Sverdrup Pass to continue the documentation and recording of muskox behaviour patterns during the late winter (April) and early winter (September), 1981. A documentary film on muskox behaviour is to be based on the 1980-81 research collections.

Collaboration in the field with researchers from the University of Guelph is proposed to develop a related ethology-physiology-adaptation research program for future seasons. This year's preliminary work will involve making collections of arctic hares and rock ptarmigan in reproductive condition for measuring the fat stores and size of muscle protein reserves. Samples of food plants will be collected for measuring of their nutritional quality in the laboratory at Guelph.

Mineral Sciences Division

Responsibilities

The Mineral Sciences Division maintains national collections of minerals, gemstones, rocks, and ores. The development of these collections into systematically complete and geographically representative collections for public and scientific understanding is an essential activity of the division. Research is collections-oriented for a better understanding of Canadian mineral and rock occurrences. The division uses the specimens and research results for scientific and popular publications and exhibits.

Review 1980-81

Field work was conducted on southern Baffin Island from July 3 to August 22, 1980. There were three camps. The first camp, on the Soper River, 15 km north of Lake Harbour, and the second camp, at Lake Harbour, were reached by fixed-wing aircraft. The third camp, on Glencoe Island, 130 km west of Lake Harbour, was reached by freighter canoe with Inuit assistance.

A total of 200 specimens were collected from 53 sites. Following identification, mainly by X-ray diffraction techniques, approximately half of these specimens were catalogued into the museum's permanent collections for display and research. The remainder will be used in exchanges with other museums and universities.

Species identified to date include members of the amphibole, pyroxene, spinel, garnet, tourmaline, and scapolite groups, titanite, haüyne (lapis lazuli), oligoclase, phlogophite, quartz, calcite, graphite, and forsterite. Detailed chemical analyses of several of these species are in progress.

Plans for 1981-82

Although there will be no Mineral Sciences Division field party to the Arctic during 1981-82, research will continue on the specimens already collected. Two publications on this research are currently in preparation.

Paleobiology Division (Quaternary Zoology Section)

Responsibilities

The division collects Pleistocene vertebrate material from the Yukon and curates and describes it in an attempt to reconstruct the vertebrate history of the region during the ice age.

Review 1980-81

From August 8 to September 3, Pleistocene mammal specimens were collected in the Dawson, Sixtymile, and Carmacks areas of Yukon. Highlights of the work included the discovery of sites in the Dawson and Carmacks areas of several bones that seem to have been modified by early man. A report on some of these finds is being made to the Yukon government. Papers published dealing, in part, with the Yukon work were: "Pleistocene mammals from Lost Chicken Creek, Alaska"; "The impact of climatic change on people in Canada"; and the National Museum of Natural Sciences climatic change project"; "Faunal exchanges between Siberia and North America: evidence from Quaternary land mammal remains in Siberia, Alaska and the Yukon Territory"; "Radiocarbon dates on some Quaternary mammals and artifacts from northern North America." ■

National Research Council of Canada

NRC

The aurora borealis or Northern Lights - observers have marvelled at their splendor and speculated on their origins since early times. Recent studies have concentrated on a wedge-shaped opening or cusp which forms on the side of the earth facing the sun. This cleft is opened up by the solar wind which forces the earth's magnetic field lines to part into two streams, one circling southward over the equator and the other tailing northward over the polar cap. Through this opening, particles streaming from the sun flow along magnetic field lines straight into the ionosphere where the aurora is produced. This phenomenon has been explored by rocket-borne instruments launched by the National Research Council's Canada Centre for Space Science from Cape Parry, NWT.



Building Research Division

Review 1980-81

Permafrost ground temperatures were measured at several sites along the proposed Polar Gas pipeline corridor from Thompson through Churchill in northern Manitoba to Baker Lake in the District of Keewatin, NWT. Ground temperature observations were continued in the high arctic at Alert, NWT, on northern Ellesmere Island.

The effects of frost on the operation of buried chilled gas pipelines in unfrozen areas of the discontinuous permafrost zone continued to be a vital part of laboratory research. The work emphasized the nature of the interrelationship of pressure, freezing temperature and heave rate. These studies produced a means of interpreting heave rates in evaluating the frost susceptibility of soils. In conjunction with this work, numerical and laboratory model studies were continued on frost heave and the use of heating cables with chilled gas pipelines.

Observations continued at several sites on the Dempster and Mackenzie Highways in the YT and the NWT to assess the long term performance of insulated and uninsulated embankments constructed on permafrost. Studies of bridge and building foundations were continued at the Eagle River on the Dempster Highway, YT, and at Alert, NWT. Observations were made regularly on sewer and water lines at Dawson City, YT, to assess design and construction methods for utility systems buried in permafrost.

Planning was undertaken for full-scale, long term tests of foundations in permafrost at an Inuvik test site. Laboratory studies were continued of the thermal and mechanical properties and the deformation behaviour of frozen soils and model piles in frozen ground.

Laboratory and field studies continued of saline ice characteristics and behaviour and investigations of the growth conditions on crystal structure and salinity for first year sea ice from Pond Inlet. Measurements of ice behaviour around the marine terminal on Strathcona Sound continued. Observations were made on the ice rubble field built up around a man-made, earth fill drilling island in the Beaufort Sea and of ice conditions during icebreaking trials of the *Canmar Kigoriak* in the Beaufort Sea and the *M.V. Arctic* in Lancaster Sound.

Plans for 1981-82

Field studies will continue on foundations for various structures and facilities built on permafrost and on the interaction between floating ice and structures. Planning will continue for long term experiments at the Inuvik foundation test site, as will the program of permafrost ground temperature measurements.

Laboratory studies of frozen ground, frost action in soils, sea ice and permafrost foundations will continue at about the same level.

Many research projects on the thermal and moisture performance of buildings subjected to cold climates are directly relevant to the construction and operation of housing and small buildings in the North. These projects will be continued.

National Aeronautical Establishment

Review 1980-81

An agreement was negotiated between the National Research Council and the Churchill Research Centre to jointly test and evaluate a 50 kW installed capacity vertical axis wind turbine. The power generated will feed directly into the Churchill electrical distribution system. The installation, to occur in the summer, 1981, is one of several across Canada aimed at evaluating the performance and operation of the NRC-developed wind turbine under various conditions.

There is interest in the North in generating electrical power by wind. Projects are under consideration for Yukon and the Northwest Territories under the framework of the federal/territorial agreement on Conservation and Renewable Energy Development.

Plans for 1981-82

Aerial magnetic reconnaissance of the region between Alert and the North Pole, carried out since the spring, 1978, will be continued in the spring, 1981. The area of interest will be extended to the west using Resolute Bay and Alert as the two northern base facilities.

Two aeromagnetic surveys will be conducted in April, 1981. One will be in the Kane Basin, between Greenland and Ellesmere Island, and the other in the area of Bylot Island. These operations will be flown from Thule, Greenland, with two refuelling stops at Frobisher Bay, NWT.

Canada Centre for Space Science

Responsibilities

The CCSS was formed in July, 1980, incorporating The Space Research Facilities Branch and the Space Science Coordination Office. CCSS supplies national facilities for the Canadian space science community by providing planning, coordinating, operational and project management services.

Review 1980-81

A total of eight sounding rockets carrying scientific payloads were launched from the Churchill Research Range, Manitoba. Five of these rockets were in support of the Canadian space science program and the remaining three were launched on behalf of NASA.

Plans for 1981-82

A joint NASA/NRC rocket and ground-based observational campaign will take place during November, 1981, and February, 1982. The campaign, *Centaur*, involves launching of two Canadian and three American rockets from Cape Parry, NWT, and the installation and operation of a ground observation station at Sachs Harbour, NWT.

CCSS also plans to implement its *Canopus* project -- a chain of ground-based stations for making geomagnetic and ionospheric observations -- at approximately 15 sites in the Yukon, the Northwest Territories, and northern areas of Saskatchewan, Manitoba, Ontario and Quebec. In 1981-82 it is hoped that planning and site selection will be nearly completed and that site acquisition will be well under way.

Electrical Engineering Division

Review 1980-81

A small project was initiated to measure sea-ice thickness from helicopters. An on going literature search of related theoretical and experimental work was continued, as was the monitoring of other Canadian developments in the field. Trials of the video-pulse radar operating at 10 MHz, held in the Ottawa region indicated that the problems of obtaining increased transmitter power, receiver sensitivity and decreased receiver recovery time had not been overcome. Therefore, no trials were scheduled over sea-ice.

Plans for 1981-82

Although it was decided to cease work on the radar, a report on the project is in preparation and publication will be mid-summer.

Chemistry Division

Review 1980-81

Laboratory studies continued into the properties of the natural gas hydrates, which occur in considerable on and offshore deposits in northern Canada. Conventional well-logging methods do not provide a clear distinction between gas hydrates and ice but tentative results suggest that thermal conductivity is much smaller for hydrates than for ice. This difference may be fruitfully employed in the field.

Plans for 1981-82

Methods of characterizing gas hydrates will continue to be studied in anticipation of the recovery of intact pressurized cores containing hydrates.

Herzberg Institute of Astrophysics

Review 1980-81

Continuous monitoring of cosmic ray intensities was carried out at Alert and Inuvik in the Northwest Territories as part of an international worldwide network program. The data was sent on a regular basis to the World Data Center for distribution to scientists.

Plans for 1981-82

The cosmic ray monitoring program will continue.

Mechanical Engineering Division

Review 1980-81

The Hydraulics Laboratory completed construction of a refrigerated model test basin which will be used in the study of dynamic ice-structure interactive forces. The physical properties of the NRC-developed model ice which is being used in this tank are being fully documented. Detailed research is being carried out into the thermal conditions required for growing structurally simulated model ice.

The Marine Dynamics and Ship Laboratory has been carrying out model experiment investigations on two arctic marine drilling conceptual designs. One is a moored barge capable of operating in light ice conditions and the other is a caisson ring artificial island for year-round operation. These experiments seek to predict the behaviour of the structures during the towing operation from building to drilling site. The models have been instrumented for the measurement of motion, acceleration and tow cable forces and are being tested in waves of different frequencies and amplitudes. The data obtained will allow prediction to be made of the tow forces, body motions and accelerations for any sea conditions.

A model of a triple screw arctic class icebreaker is currently being constructed for study of wake and propulsive performance characteristics with and without propeller ice guards. These studies will ultimately assist the Ship Safety Coast Guard Branch of Transport Canada establish ice navigation standards. Detailed experiments of ice ingestion into a propeller nozzle arrangement were conducted in connection with the design of a prototype LNG carrier for the arctic.

Resistance, self-propulsion, tow rope pull and wake studies were conducted in clear water on a model of an arctic multipurpose vessel designed in Finland.

Three oil drilling ships, operating in iceberg infested waters off Labrador, were each assigned an ocean-going tug to stand by and tow away icebergs which appeared to be on a collision course with the drill ship. During July to September laboratory personnel put instruments on these three tugs thus enabling them to measure the tension on the tow line during iceberg towing operations and record shipboard parameters and the resulting effectiveness of the tows.

In cooperation with the Canadian Coast Guard and the Newfoundland government, the laboratory participated in the second phase of trials with the CCGS *Franklin*. Model correlation studies have been carried out by the laboratory. A comparison of model and results is the basis of a paper to be presented at the Society of Naval Architects and Marine Engineers' *Ice Tech '81*, Ottawa, June, 1981.

Scale models of the above icebreaker were constructed by the laboratory which, with the permission of the Canadian Coast Guard, are being used by the Ice Committee of the International Towing Tank Conference for comparative model studies. The laboratory is collating and reviewing these results.

The laboratory participated in two additional phases of full scale trials with the M.V. *Arctic*. The first phase was carried out around the northern tip of Baffin Island in late October – early November, 1980, while the second was a probe into Lake Melville, Labrador, in late February – March, 1981. Separate reports for each phase will be issued.

Plans for 1981-82

The main structures carriage for the model test basin in the Hydraulics Laboratory will be installed and model testing will commence of ice-structure interactions. In addition, the necessary computer software will be written to enable control and data acquisition of test results with the in-house computer.

The Marine Dynamics and Ship Laboratory is playing a leading role in organizing the Society of Naval Architects and Marine Engineers' Spring Meeting/STAR Symposium *Ice Tech '81* to be held in Ottawa, 16-19 June, 1981. International authors will present 26 papers on topics of interest to those involved in arctic marine transportation, research and development.

The concept design of the new Arctic Vessel and Marine Research Institute, St. John's laboratories, has been completed and its budget approved by Treasury Board. Construction is expected to commence in April, 1981, with completion in 1984.

Physics Division

A joint project with Environment Canada and the Technological Universities of Zürich and Vienna produced stereo-orthophotos at scales 1:5000 and 1:10 000 of various glaciers on Axel Heiberg Island, NWT, from photographs taken during the summer, 1977. These glaciers were mapped earlier by the Photogrammetric Research Section from photographs taken in 1961. The project monitors the changes in the snow and ice cover over the 1961-1977 period.

Plans for 1981-82

The interpretation and measurement of the stereo-orthophotos at the University of Zürich has been delayed as the result of the death of Dr. F. Müller, the glaciological expert on the project. A replacement will be appointed to coordinate the glaciological and cartographic aspects of the project at the University of Zürich. ■

Northern Canada Power Commission

NCPC

The Northern Canada Power Commission (NCPC), a federal Crown corporation, operates under authority of the Northern Canada Power Commission Act. It is concerned with the planning, construction and management of public utilities, primarily electrical, on a commercial basis. It is empowered to survey utility requirements and construct utility plants in the Northwest Territories and Yukon.

The commission is the principal producer of electrical energy in northern Canada and operates the main transmission networks in the YT and NWT. In addition, it operates community heating, water and sewerage systems in several locations.

It is a requirement of the authorizing act that operations of the commission shall be self-sustaining. Rates charged for utilities must provide sufficient revenue to cover interest on investment, repayment of principal over a period of years corresponding to the estimated economic life of the related asset, operating, maintenance and administrative expenses, and a contingency allowance sufficient to meet unforeseen or emergency expenditures.

Review 1980-81

During 1980-81, the commission provided retail electric utility service to 49 communities in the NWT and four communities in YT, as well as in Field, British Columbia. The commission also supplied wholesale electrical energy to local electrical distributors in Yellowknife, NWT, and Whitehorse, Haines Junction, Ross River, Carmacks and Keno City, YT. This service was provided from seven hydro-electric plants and 52 diesel-electric plants.

The commission also supplied retail central heat, water and sewerage utility service in Inuvik, NWT, as well as wholesale central heat utility service to the Government of the Northwest Territories at Frobisher Bay. In the interest of energy conservation and overall efficiency of operation, during the year the commission provided waste heat from its diesel generating plants to various customers at Dawson City, YT, Cambridge Bay, Igloolik and Rankin Inlet, NWT.

Electrical generating capacity increased by 1420 kW during the year, including the installation of diesel generating equipment at Norman Wells, NWT, (700 kW) and Tuktoyaktuk, NWT, (600 kW). Several diesel units were also removed from Broughton Island, Grise Fiord, Igloolik, Jean Marie River, Lake Harbour, Paulatuk and Rae Lakes, NWT, totalling 2825 kW capacity, to facilitate the installation of large units in each community.

Major line extensions were constructed at Faro, Pine Point, Tuktoyaktuk, Norman Wells, Dawson, Fort Norman, Coral Harbour, Fort McPherson, Holman Island, Igloolik, Cape Dorset, Broughton Island, Pangnirtung and Baker Lake. These extensions included electrical services provided to petroleum-oil-lubricant sites, housing developments and airports.

Total electrical generation during 1980-81 was estimated to be 2 825 222 400 MJ, composed of 2 051 276 400 MJ by hydro generation and 773 946 000 MJ by diesel-electric generation, an increase of 88 696 800 MJ or 3.2 per cent over 1979-80. Electrical sales in Yukon Territory were approximately 1 207 512 000 MJ, an increase of 4.5 per cent over the previous fiscal year. Electrical sales in the Northwest Territories totalled approximately 1 304 085 600 MJ, which was a decrease of .6 per cent from 1979-80. The non-coincidental peak demand on all operations during the year was 146 194 kW, an increase of 11.2 per cent over the non-coincidental peak demand of 131 442 kW in 1979-80.

Plans for 1981-82

Projected significant operating statistics for 1981-82 fiscal year include the following: Estimated electrical generation, 3 044 347 200 MJ; estimated electrical sales, 2 747 653 200 MJ; estimated central heat sales, $414\,464 \times 10^6$ KJ; estimated fuel consumption (diesel generation and central heating system), 102 006 459 L; total employee man-years, 330; total number of communities directly serviced by the commission, 54; total number of communities serviced indirectly by the commission (wholesale supply to local distributors), 6.

Major capital projects proposed for 1981-82 include:

Installation of switchable reactor at Yellowknife substation	72 000
Improvements to Snare Hydro protection system	100 000
Installation of 800 kW standby unit at Rae/Edzo	177 000
Installation of distribution extensions at Fort Rae	50 000
Installation of 2500 kW unit at Fort Smith	90 000
Installation of distribution feeder at Fort Smith	75 000
Installation of Whitehorse No. 4 Hydro Jnit	400 000
Installation of 6 MW additional generating capacity at Frobisher Bay	750 000
Construction of a two-bay garage at Frobisher Bay	80 000
Installation of 600 kW generating unit at Aklavik	125 000
Modification to A.V.R.'s on Ossberger units at Taltson	143 000
Extension of supervisory control from Fort Smith to Pine Point	350 000
Installation of 500 kW diesel unit at Dawson	100 000

Installation of 68 191 L fuel storage tank at Coppermine	69 000
Purchase of 953 000 L fuel storage tank for Cambridge Bay	150 000
Distribution expansion at Norman Wells	75 000
Upgrade ventilation and heating at Norman Wells	50 000
Installation of 953 000 L fuel tank at Baker Lake	130 000
Installation of 4160 V switchgear and feeder cells at Fort Good Hope	126 000
Installation of radiators at Fort Good Hope	75 000
Completion of substation extension and modifications at Tuktoyaktuk	139 000
Distribution for new subdivision at Tuktoyaktuk	65 000
Installation of 90 922 L fuel storage tank at Tuktoyaktuk	55 000
Installation of supervisory control at Tuktoyaktuk	100 000
Installation of 400/500 kW module unit at Clyde River	350 000
Installation of a 90 922 L fuel storage tank at Clyde River	50 000
Installation of 227 305 L fuel tank at Arctic Bay	65 000
Installation of 600 kW generating unit and switchgear at Pangnirtung	100 000
Installation of common rail cooling system at Gjoa Haven	80 000
Upgrading of fuel handling system at Spence Bay	68 000
Conversion of underground distribution to overhead at Holman Island	60 000
Replacement of fuel line at Whale Cove	85 000
Extension of powerhouse building at Cape Dorset	75 000
Installation of a 500 kW generating unit and switchgear at Broughton Island	260 000
Installation of 600 kW generating unit and switchgear at Hall Beach	309 000
Installation of 150 kW generating unit at Lac La Martre	119 000
Additional generating requirements for 7.5 MW increase at Faro	7 500 000 ■

Northern Pipeline Agency

NPA

Responsibilities

The Northern Pipeline Agency, established in April, 1978, under authority of the Northern Pipeline Act, oversees the regulation of the 3 240 km Canadian segment of the Alaska Highway gas pipeline to ensure that construction and operation provides maximum economic, industrial and energy benefits for Canada. The agency also ensures that social and environmental impacts are kept to a minimum.

The pipeline will carry natural gas from Alaska along a route which closely follows the Alaska Highway through Yukon and northeastern British Columbia before branching through southern Alberta, southeastern British Columbia and Saskatchewan into the United States. A future pipeline lateral along the route of the Dempster Highway, joining the main pipeline at Whitehorse, Yukon, would give Canada access to established reserves in the Mackenzie Delta and any new reserves that might be found in the Beaufort Sea.

Under the Canada-U.S. Agreement of September 20, 1977, the U.S. pays for all or part of the cost of transporting gas through the pipeline between Dawson and Whitehorse. This will be under a formula related to the costs of the Canadian segment of the pipeline and the volume of Canadian gas flowing through the system.

Review 1980-81

The socio-economic and environmental terms and conditions for south Yukon segment of the Alaska Highway Gas Pipeline Project were finalized by officials of the Northern Pipeline Agency and approved August, 1980. Consideration was deferred on the terms and conditions by the Governor-in-Council pending a review of the possible implications of the mobility rights contained in the proposed Canadian Charter of Rights and Freedoms. The proposed Yukon terms and conditions specify preferential hiring of Yukon residents.

During the 1980 summer, Foothills Pipe Lines (Yukon) Ltd. conducted geophysical and geotechnical assessment programs along the preferred routing and cleared a two metre strip along the southern boundary of the proposed right-of-way. The company conducted surveys to determine the existence and extent of permafrost as well as hydrometric, geophysical and geotechnical surveys of Kluane Lake. This research is required for the preparation of the plans, profiles and books of reference which describe the proposed pipeline design and routing.

In its interim report to the Minister of Environment in September, 1979, the Environmental Assessment Review Panel (EARP) listed a series of deficiencies with respect to the Environmental Impact Statement prepared previously by Foothills. In early 1981, Foothills submitted to the agency and to the EARP Panel an addendum to the Environmental Impact Statement which addressed routing alternatives in the Whitehorse-Ibex Pass Region. This was the first of several additional pieces of information that the company must submit to the Panel.

Environmental studies were conducted by Foothills, including fall fisheries in Kluane Lake, spawning salmon in south Yukon aquatic systems, and monitoring of Ibex Valley sheep and Burwash Uplands caribou.

The Northern Pipeline Agency entered into a contract with the Council for Yukon Indians to undertake a mapping project along the proposed pipeline routing in south Yukon. The completed study identifies areas of cultural or traditional importance to the Indians. As well, Foothills conducted an archeological survey along the proposed pipeline route and contracted for the mapping of land use areas, including trapping and guiding areas.

The third phase of the Northern Business Inventory was completed by Foothills, providing a complete description of businesses, their capabilities and equipment so that they may be included in bidding on pipeline-related work.

The Hon. H.A. (Bud) Olson, Minister responsible for the Northern Pipeline Agency, and senior agency officials travelled to Yukon in the fall of 1980 to consult with representatives of the Yukon Territorial Government and the Yukon Advisory Council.

Officials of the Northern Pipeline Agency consulted with their counterparts in the federal, provincial, territorial and U.S. governments. In addition to a meeting in Whitehorse in September, 1980, Yukon government representatives and agency officials attended the quarterly meetings of the Federal-Provincial-Territorial Consultative Council. Agency staff met with representatives of the Office of the Federal Inspector and State Pipeline Coordinator's office in Fairbanks, Alaska, and Whitehorse, Yukon, during the year.

In keeping with the "single-window" regulatory concept of the Northern Pipeline Agency, certain acts previously administered by the Department of Indian Affairs and Northern Development, the Department of Fisheries and Oceans, and the Department of Environment were transferred to the agency in August, 1980, for pipeline purposes only.

The Yukon Advisory Council inspected the Cold Regions Research and Engineering Laboratory permafrost tunnel and the Northwest Alaskan frost heave test site, as well as Prudhoe Bay production facilities. The council met also with federal, state and corporate officials involved in the gas pipeline project. In November, 1980, the newly-appointed North B.C. Advisory Council travelled to Whitehorse to consult with the Yukon Advisory Council.

From late 1980 through the first quarter of 1981, thaw settlement test facilities were constructed at Quill Creek, Yukon, by Foothills Pipe Lines (South Yukon) Limited. The project employed local businesses and labour and provided a test run for socio-economic and environmental conditions, as well as technical and engineering aspects. Socio-economic and environmental conditions were attached to the land-use permit issued by the agency in connection with this test program. The work force, which peaked at approximately 100 persons, included a substantial number of Yukon residents. Construction of the \$15 million project involved the installation of a variety of experimental pipeline construction modes, both insulated and uninsulated. Various construction techniques and embankment designs were used in the project. The facilities at the test site are instrumented and will be monitored with scientific equipment for a period of at least five years. The data collected will be used in design and construction planning for the mainline project. Inspection and surveillance of the construction work were conducted by the agency.

Plans for 1981-82

It is expected that the socio-economic and environmental terms and conditions for the Yukon segment of the Alaska Highway Gas Pipeline Project will be promulgated by the Governor-in-Council and the plans required from the company will be submitted for review to the Northern Pipeline Agency. All plans must be approved before mainline construction starts.

Construction of the Quill Creek thaw settlement test site was completed in April, 1981, and full instrumentation of the facility is expected to be completed in the second quarter of the year. Further geotechnical and geophysical drilling programs will be undertaken during the summer of 1981.

Surveillance and monitoring of field activities will be done by the Northern Pipeline Agency. Foothills plans to undertake an Operation and Maintenance training and information recruitment program in the spring of 1981.

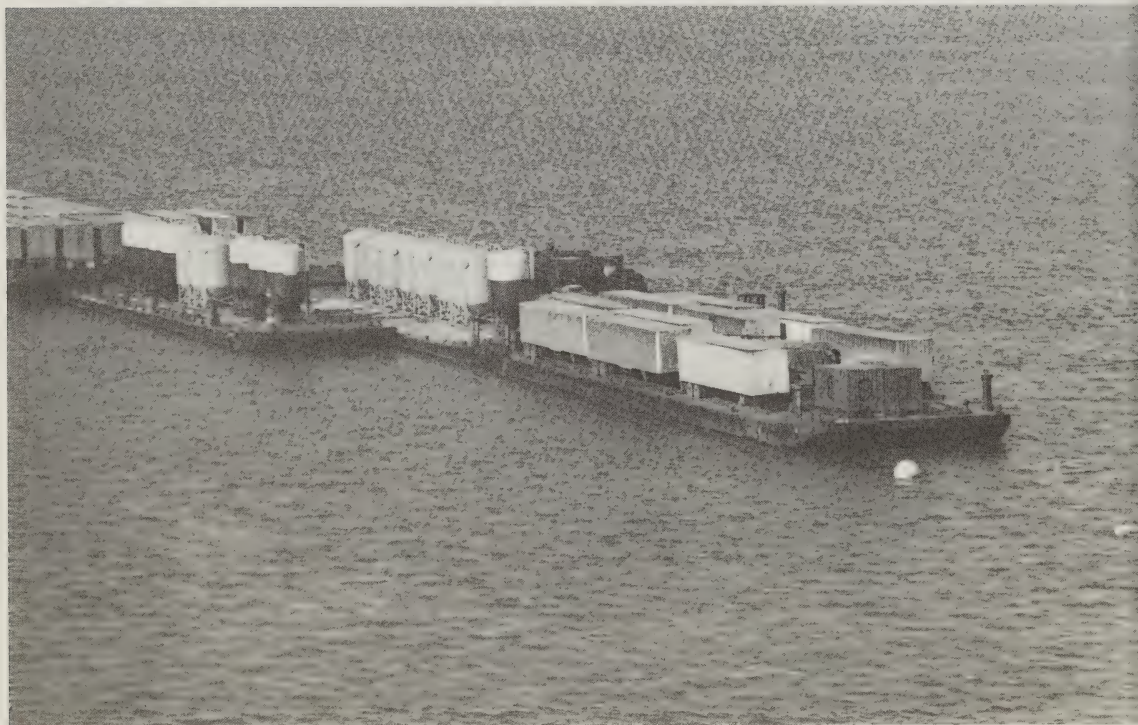
The Special Senate Committee on the Northern Pipeline is planning a trip to Yukon and Alaska in June, 1981.

It is expected that an administrative agreement will be signed by Canada and Yukon during 1981. This agreement will identify arrangements for shared surveillance and monitoring. The Easement Agreement for the Right-of-Way in Yukon is being negotiated among the federal and Yukon governments and Foothills. Signing of the document is expected during 1981, which will allow for the narrowing of the current five-mile wide corridor to 240 metres.

Clearing of the Yukon mainline right-of-way is scheduled to start in the winter of 1982. If this schedule is met, the level of activity of the Northern Pipeline Agency in Yukon will be high as surveillance and monitoring activities will intensify. ■

Northern Transportation Company Limited

NTCL



Northern Transportation Company continues to form the principal transportation link for the movement of bulk petroleum products and dry cargo to isolated communities, as well as to the oil and gas exploration and mining industries in northern Canada.

Responsibilities

Northern Transportation Company Limited was incorporated federally in 1947 and continued under the Canada Business Corporations Act in 1977. This profit-oriented commercial Crown corporation's primary objective is to provide economic, reliable and comprehensive transportation and related services in northern Canada and the arctic.

Northern Transportation has provided marine transportation services throughout the Mackenzie River watershed since 1934, and along the western arctic coast and islands since 1957. Keewatin operations, out of Churchill, Manitoba, were inaugurated in 1975 and since then the company has provided resupply services to five communities along the west coast of Hudson Bay and Coral Harbour on Southampton Island.

Review 1980-81

The company transported 305 952 tonnes of deck and bulk cargo during 1980, 3 per cent less than in 1979. This decrease was due primarily to the completion of the Charlotte River hydro power project in northern Saskatchewan and the substitution of hydro electricity for petroleum-based energy. There was also a slight decrease in the Keewatin freight as well as a reduction in cargo bound for Alaska.

The Mackenzie River system and the western arctic produced the most favourable results, even though in some ways this area was the most disappointing. Gross tonnage was up approximately 6 per cent over the preceding year. All community resupply cargo was delivered. However, because of extremely low water levels, particularly during the latter part of the operating season, the company was unable to meet all of its commitments for the delivery of fuel and drilling muds bound for the Beaufort Sea. The only other recorded shortfall in the company's history occurred in 1938.

The unusually low water levels on the Mackenzie resulted in lost revenue and contributed to increased operating costs. Two more vessels were put into service in August in an effort to deliver as much cargo as possible. The carrying capacity of barges was drastically reduced and tows had to be relayed one barge at a time through the rapids. The turnaround time of equipment was substantially increased. In addition, because it eventually became impossible to negotiate a sharp ledge at the "Ramparts", just upstream from Fort Good Hope, a number of tugs and barges had to be left at Inuvik instead of being returned to Hay River for winter berth.

No serious difficulties were encountered in the Keewatin sector even though the whole of the shipping season was marked by extremely cold and windy weather.

Operations in the western arctic began on July 16 and while oil and gas exploration companies operating in the Beaufort Sea were hampered by unfavourable off-shore ice conditions, the navigation lanes were relatively free of ice. All cargo was delivered without difficulty.

Palletizing and shrinkwrapping dry cargo is fast becoming a thing of the past as the trend to containerized and piggyback freight gains momentum.



There is an ever-increasing trend to containerized and piggyback freight in the North.

Although, the company has provided marine transportation services on Great Bear Lake since 1934, service on the Great Bear Lake was discontinued at the end of the 1979 operating season because it was no longer viable. At the government's request, Northern Transportation maintained service on the Great Bear River between Fort Norman and Fort Franklin for another year. The closure was completed at the end of the 1980 operating season. All shore facilities were dismantled or disposed of, and marine and shore equipment was transferred for use elsewhere.

In many ways, closure of the company's Great Bear Lake operations was the end of an era. The first radium deposits in North America were discovered at Port Radium in 1933 and during World War II, the area took on a renewed and special significance as the major supply source of uranium for the American nuclear weapons "Manhattan" project.

Freight in the Athabasca sector decreased 24 per cent in 1980 compared to the previous year and the long-term outlook for this sector is not favourable as some of the traffic is diverted to other modes of transportation.

Plans for 1981-82

Tonnages on the Mackenzie and western arctic are again expected to increase in 1981. Optimism over these projections is tempered by the realization that low water levels, similar to those experienced in the past year, could dramatically affect performance. The problems encountered during 1980 illustrate the urgent need for navigational improvements to the Mackenzie River if this waterway is to continue to be a reliable transportation artery to the Canadian arctic. A dredging program was considered several years ago by the federal government but was not pursued. The company hopes to convince authorities of the immediate need for such a program.

It is anticipated that tonnages in the Keewatin, which dropped off slightly in 1980, will show a modest increase as inventories of bulk fuels are replenished. The company is also forecasting an increase in freight for Alaska's north slope. ■

Post Office Department

PO

Responsibilities

Canada Post provides national mail coverage to all Canadians for the same costs, not only along the well-established transportation networks in the south, but to the remote areas north of 60°. Currently there are 78 post offices in the North. In some settlements they are run by individual firms or organizations on behalf of Canada Post.

Two postal regions are responsible for the mail service to the North. The Quebec Region is responsible for service to communities in the Ungava Bay area and the east coast of Hudson Bay, to Baffin Island, Melville Island, Cornwallis Island, and Ellesmere Island in the District of Franklin, and to Igloolik and Hall Beach on the Melville Peninsula. The Western Region is responsible for postal service to communities in Yukon, the District of Mackenzie, and the District of Keewatin, as well as to Banks Island, Victoria Island, and the Boothia Peninsula in the District of Franklin. The post office at Sanikiluaq, Belcher Islands, is south of the 60th parallel, but since it is on an island in Hudson Bay, it is considered to be part of the northern operation.

Some northern residents receive their mail by courtesy bag service whereby it is processed by Canada Post and placed in bags for a mining company or an oil exploration company to deliver to their personnel.

Canada Post maintains constant contact with agencies in the territories to meet postal needs of a growing northern population.

The mail base for all the eastern arctic is Montreal. Mails that originate east of Winnipeg for Fort Chimo, Frobisher Bay, Hall Beach, and Resolute are massed and processed at Montreal for air conveyance. Mails originating west of Winnipeg for the eastern arctic are gathered in Edmonton for despatch by air service to Resolute.

Mails for the Keewatin District from all parts of Canada are massed in Churchill. Despatches for the District of Mackenzie are centralized and processed at Edmonton. Mails for the Yukon, depending on the originating points, are centralized in either Edmonton or Vancouver.

Review 1980-81

The post office at Akulivik opened in 1978, obtained a permanent postmaster in 1980.

The air service between Dawson and Mayo-Elsa was discontinued. In its place, the existing highway service between these communities was increased from two to three runs per week.

Plans for 1981-82

The Canada Post Corporation Act received third reading and royal assent on April 23, 1981. It is expected that full conversion of the Post Office from a department of government to a Crown corporation will take place when the Act is proclaimed in September, 1981.

Like Canada Post, the new corporation will serve Canadians whether they live in the older and more settled areas of the south or in Canada's arctic regions.



1981 Post Offices North of the 60th parallel

- | | | | |
|----------------------|----------------------------|------------------------|---------------------|
| 1. Alert | 21. Cambridge Bay | 41. Lake Harbour | 61. Whitehorse |
| 2. Eureka | 22. Spence Bay | 42. Faro | 62. Snowdrift |
| 3. Grise Fiord | 23. Pangnirtung | 43. Ross River | 63. Carcross |
| 4. Mould Bay | 24. Gjoa Haven | 44. Destruction Bay | 64. Tagish |
| 5. Resolute | 25. Coppermine | 45. Carmacks | 65. Fort Simpson |
| 6. Nanisivik | 26. Repulse Bay | 46. Coral Harbour | 66. Teslin |
| 7. Pond Inlet | 27. Clinton Creek (closed) | 47. Tungsten | 67. Swift River |
| 8. Arctic Bay | 28. Dawson | 48. Baker Lake | 68. Watson Lake |
| 9. Sachs Harbour | 29. Elsa | 49. Chesterfield Inlet | 69. Fort Liard |
| 10. Clyde | 30. Fort Good Hope | 50. Rae | 70. Fort Providence |
| 11. Broughton Island | 31. Mayo | 51. Yellowknife | 71. Fort Resolution |
| 12. Tuktoyaktuk | 32. Frobisher Bay | 52. Rankin Inlet | 72. Hay River |
| 13. Holman | 33. Beaver Creek | 53. Whale Cove | 73. Pine Point |
| 14. Igloodik | 34. Pelly Crossing | 54. Eskimo Point | 74. Fort Smith |
| 15. Hall Beach | 35. Norman Wells | 55. Ivuvik | 75. Povungnituk |
| 16. Old Crow | 36. Fort Norman | 56. Sugluk | 76. Bellin |
| 17. Aklavik | 37. Fort Franklin | 57. Deception Bay | 77. Sanikiluaq |
| 18. Inuvik | 38. Port Radium (Echo Bay) | 58. Maricourt | 78. Pelly Bay |
| 19. Fort McPherson | 39. Wrigley | 59. Koartac | 79. Akulivik ■ |
| 20. Arctic Red River | 40. Cape Dorset | 60. Haines Junction | |

Responsibilities

The Public Service Commission of Canada (PSC), which administers the Public Service Employment Act (PSEA), ensures that the merit principle is upheld in federal staffing actions. The PSC develops and administers standards for selection of candidates for the public service; provides and operates mechanisms for appointments challenged as violations of the merit principle; and audits the manner in which staffing authority is exercised.

The commission administers the Public Service Employment Act as it relates to the political activities of public servants, ensures equality of access to the public service for all Canadians, conducts and advises on training and development programs, and investigates discriminatory treatment in the public service.

Review 1980-81

Native Employment

The Office of Native Employment, through PSC District Offices in Yellowknife and Whitehorse, continued to promote employment opportunities for native people interested in careers with federal departments and agencies in the North.

The Office of Native Employment continued to provide support and advisory services to the Joint Council and was an integral member of the Work Group. Both of these organizations include representatives from the PSC, Treasury Board Canada, and the five national indigenous associations, the National Indian Brotherhood, Native Council of Canada, Inuit Tapirisat of Canada, National Association of Friendship Centres, and Native Women's Association of Canada.

The Joint Council reviews the progress made towards achieving departmental native employment action plans and evaluates the results. The related Work Group, which reports to the Joint Council, reviews and summarizes departmental action plans for implementation of native participation.

A second Work Group was organized in 1980-81 to consider issues relating to training and development. This group will continue its work in the coming year, reporting its findings and recommendations to the Joint Council.

The recommendations of the Joint Council report of June, 1980, were endorsed by Treasury Board and are before Cabinet. The recommendations included a call for increased emphasis on training and development programs to remove obstacles to full participation of native people in the Public Service.

The PSC bulletin on "Staffing in the North," issued in 1980, set out changes to the competition guidelines to promote more use of northern people and their talents. This bulletin also supported departmental efforts to develop northern staff. The Office of Native Employment continued to work closely with Northern Careers Program (NCP) managers to develop and expand possibilities for NCP participation.

The Northern Careers Program, which recruits and trains participants from the northern native population, allows participants to begin as conditional employees of the commission. With individually designed career and training plans, the participants undertake on-the-job and formal training for up to two years to prepare them to compete for permanent positions in the northern labour force.

The program, sponsored by the Department of Indian Affairs and Northern Development, is operated by the PSC for 17 federal departments in the NWT and Yukon. Recently two autonomous operating units were established in Yellowknife and Whitehorse to better serve the differing program requirements. Policy direction and coordination is provided through an Ottawa unit.

At December 31, 1980, 236 Indians, Inuit and Metis had been recruited. Of these, 79 have completed full career plans and have "graduated", while an additional 37 have transferred to positions equal to, or higher than, they held at entry. These transfers are conscious career choices by participants, who retain eligibility to return to the program. Forty-seven participants have withdrawn from the program and 70 are currently undergoing training. Many of the participants who withdrew secured new and better employment with other levels of government in the North.

Staffing Branch

The Staffing Branch has been fully operational in the Northwest Territories and Yukon for over two years, providing a full range of staffing services to the 20 federal government organizations north of 60°.

Particular emphasis continues to be placed on exposing northern residents to federal employment opportunities. Special efforts have been made to focus on recruitment activities in the territories through implementation of the branch policy on staffing in the North.

Extensive advertising campaigns on radio, television and in newspapers reached a wide audience. In addition, work opportunities were advertised in the eastern arctic in the Inuktitut language. Travel by PSC staff to major communities across the North, and continuous liaison with native associations, have improved local awareness of federal employment opportunities.

The northern staffing offices have maintained on going employment information and counselling services for northern residents. These offices also provided advice and assistance on personnel matters to local federal managers.

Over the past fiscal year, there was a significant increase in the demand for recruitment and referral services from the northern offices. The number of vacancies registered increased by more than 50 per cent, reaching approximately 800 positions.

These offices enrolled more than 1500 qualified applicants in the scientific, professional, technical and administrative fields.

Plans for 1981-82

The forecasted 1981-82 PSC activities in the North will require 78 person-years and \$2 397 674.

The Office of Native Employment will continue its work to increase employment opportunities in federal departments and agencies in the North for native people. The office will work with the Northern Careers Program.

The Office of Native Employment will ensure that native people are involved in the staffing of positions in the North.

The Joint Council will present its second annual report to Cabinet in June, 1981.

The district staffing offices will continue to provide a full range of recruitment, referral and staffing services. ■

Department of Public Works

DPW



Public Works crews work on the centre pier of the Blackstone River bridge (km. 108) on the Liard Highway, N W T, June 1980.

Responsibilities

Public Works Canada (PWC) provides a broad spectrum of services to other government departments and agencies. As the property manager for the Government of Canada, PWC acquires and disposes of property as required. In addition, PWC leases premises for the Government of Canada and supervises the renovation, maintenance and management of government buildings. The department provides a wide range of engineering, architectural, and construction services, including planning, feasibility studies, site analysis, design, construction, and maintenance, of public utilities, highways, harbours, and wharves.

PWC is deeply involved in two predominant aspects of life in the North: housing and transportation. The department provides dwellings for federal government employees and operates water transportation routes navigable in the North, and designs, constructs, and maintains the ever-expanding highway system in Yukon and Northwest Territories.

Western Region

Review 1980-81

Highway construction on behalf of the Department of Indian Affairs and Northern Development continued this year and the Dempster Highway, linking Dawson City, Yukon, with Inuvik, Northwest Territories, was completed and turned over to the Government of the Northwest Territories. Expenditures on the Dempster Highway amounted to \$1 226 000.

Work on the Mackenzie Highway comprised spreading gravel on a 50 km section of the road south of Inuvik at a cost of \$684 000.

The Liard Highway, which will link the Mackenzie and Alaska highways, is now 65 per cent complete. Construction costs for the year were \$10 886 000.

Contracts were awarded for the first two phases of a housing project in Frobisher Bay in the amounts of \$1 744 500 and \$1 764 900.

Dredging was carried out on Great Slave Lake and the Mackenzie River in the Northwest Territories at a cost of \$36 000.

An evaluation report on a test installation for proposed shore protection at Tuktoyaktuk, Northwest Territories, was completed for the Government of the Northwest Territories. The project cost an estimated \$2 900 000.

Alterations to the nursing station in Ford Good Hope cost \$240 000. Site evaluations, site design, and planning reports were completed for nursing station projects in Arctic Bay, Baker Lake, Cape Dorset, and Repulse Bay. The Cape Dorset project was processed to the tender stage. Renovations to nursing stations in Baffin Island and Rankin Inlet cost \$263 000 and \$70 000 respectively.

A new RCMP detachment was completed in Hay River at a cost of \$787 000, and contracts were awarded for new detachment quarters in Coppermine and Tuktoyaktuk.

Plans for 1981-82

Construction is to commence on Phases III and IV of the housing development in Frobisher Bay.

Construction will continue on the Liard Highway. This project is now 65 per cent complete and should be open to traffic some time in 1983.

Construction will commence on nursing stations in Holman Island and Cape Dorset.

Residences for dental hygienists are planned for Pond Inlet, Igloodik, and Arctic Bay.

Several RCMP projects are planned for 1981-82. Quarters for detachments will be built in Coppermine and Tuktoyaktuk. The former RCMP detachment building in Hay River will be relocated to Pine Point. New single-family dwellings are to be built in Tuktoyaktuk and Fort Franklin.

Pacific Region

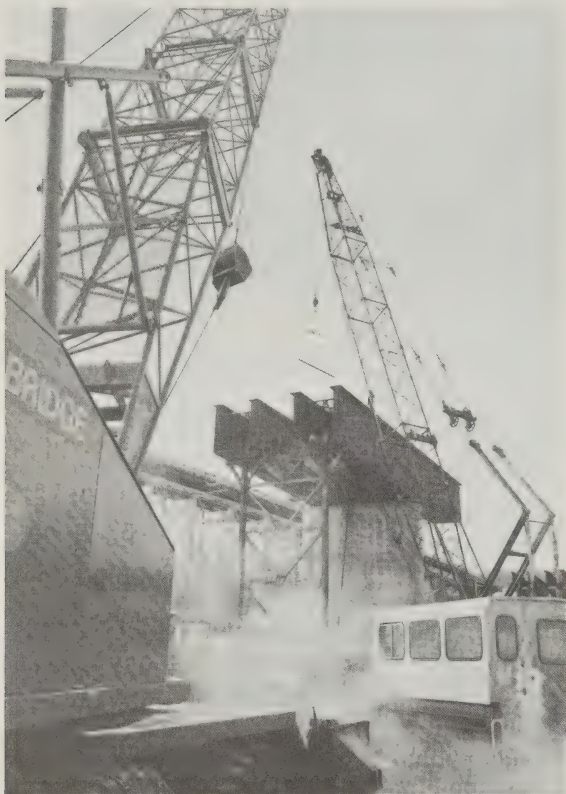
Review 1980-81

Maintenance of the Northwest Highway System, the Alaska Highway and the Haines Road west of the B.C.-Yukon border crossing at km 1008, was carried out by the Government of the Yukon Territory under an agreement with Public Works Canada. The work consisted of routine maintenance, 150 km of BST (emulsified asphalt with crushed aggregate blotter), a new multiplate culvert at Lewes Creek (km 1749) and two erosion control groynes in the Slims River. No extraordinary flooding, slides, or washouts occurred. Total cost for 1980-81 was \$9 585 000.

The capital program of the department totalled \$4 829 000 for work on the Alaska Highway in the Yukon and northern B.C., east of km 1001. The work included grade construction, clearing right-of-ways and stockpiling base course aggregate.



Travel trucks move to and from the stockpile of gravel at km. 1531 of the Mackenzie Highway, N.W.T., in June 1980.



The Muskwa River Bridge at Fort Nelson, B.C. is four to five years old. It is typical of the successful design now being standardized.

Expenditure on the Shakwak project (joint U.S. — Canada project funded by the U.S. for upgrading the Haines Road and the Alaska Highway northwest of Haines Junction, Yukon), was \$12 850 000 for a total, to date, of \$27 103 000. Work has been restricted to engineering and construction on the Haines Road and BST of the section on the Alaska Highway from km 1634 to 1664.5. The major projects were clearing and sub-grade construction on the Haines Road from km 70.2 to 88.5 and sub-grade, base and BST on km 207.8 to 255.4. Sub-base, base and BST was completed on the Alaska Highway from km 1634.5 to 1664.5.

The program for the Department of Indian Affairs and Northern Development consisted of finishing the design and specifications for permanent bridges across the Blackstone River on the Dempster Highway and the Frances and Hyland rivers on the Nahanni Range Road.

Plans for 1981-82

Maintenance of the Northwest Highway System in Yukon will continue under the agreement with the Government of the Yukon Territory. The program of resurfacing and dust suppression will be continued.

The Public Works Capital Program on the Alaska Highway in the Yukon will cost \$10 600 000 and include grade construction and base course work between km 1251 and 1390.

Work on the Shakwak project will be restricted to the completion of projects already approved. No new funds will be made available under this project in the foreseeable future. Work will include sub-grade construction, surface treatment, construction of Dezadeash overflow structures and approaches, construction and surfacing through Haines Junction Townsite.

Projects sponsored by DIAND in the Yukon may include a start on the construction of the Frances River and Hyland River bridges on the Nahanni Range Road, and the Blackstone River Bridge on the Dempster Highway. ■

Department of Regional Economic Expansion

DREE



This ski chalet was constructed in Whitehorse, funded jointly by DREE, DIAND and the Yukon Government under a Subsidiary Agreement on tourist development.

Responsibilities

DREE plans and coordinates programs designed to overcome regional economic disparities in Canada. In cooperation with the territorial governments, the Department of Indian Affairs and Northern Development, and other federal agencies, DREE participates in the joint planning and implementation of regional socio-economic programs for those northern areas requiring development assistance.

Northwest Territories

Review 1980-81

The Interim Subsidiary Agreement on Community Economic Development, under the General Development Agreement signed by DREE, DIAND, and the Government of the Northwest Territories, was in its second year of implementation. The Subsidiary Agreement, originally scheduled to expire March 31, 1981, was extended to provide program continuity to September 30, 1981. The Agreement, with an overall budget of \$3.8 million, provides for projects in tourism, renewable resources, job rotation and community planning.

Activity under the Special Rural Development Agreement (Special ARDA), signed in 1977, indicates a high level of program acceptance by native people of the NWT. The program provides financial and other assistance, particularly to Indian or Inuit people, for the development of employment opportunities and improvement of socio-economic circumstances. More than 360 applications for funding have been received since the program started, and 205 have been accepted involving a commitment of approximately \$7 million.

The Regional Development Incentives Program (RDIA), which provides contributions and loan guarantees to business and industry willing to establish, expand or modernize manufacturing or processing facilities, accepted six offers involving a departmental commitment of \$239 000. They will provide 53 new jobs in the territory.

Plans for 1981-82

Initiatives under the General Development Agreement will be discussed. The future direction of the Special ARDA agreement is expected to be discussed as well.

Yukon

Review 1980-81

Two agreements, subsidiary to a General Development Agreement signed between Canada and Yukon in 1977, are currently providing assistance for Renewable Resource Development and Tourism Development.

The Renewable Resource Development Agreement provides \$6.6 million, including \$3.12 million from DREE for programs to expand the resource information base and to upgrade such recreational facilities as territorial parks, campgrounds and historic sites in Yukon. Environmental land surveys are being prepared for the Southern Lakes and McMillan Pass areas of the territory. Work was completed during this past year on three campgrounds and a renewable resource workshop and training complex. Some of this work and other community development projects were carried out by the Resource Development Corps which provides training and work experience for Yukon residents.

Under the Tourism Development Agreement, \$6 million, including \$3.6 million from DREE, is available to further develop this industry in Yukon. Significant progress has been made to improve downtown Dawson City and incentives have been offered to the private sector to increase accommodation for tourists and to erect appropriate facades on buildings in the historic region of the town. In Whitehorse, a ski chalet was completed which enabled the city to host the 1981 World Cup and North American championships for cross-country skiing. It is expected that this \$15 million facility will lengthen the tourist season and accommodate business conventions.

DREE has committed \$1.9 million to the Special Rural Development Agreement (Special ARDA) which provides financial and technical assistance for development of employment opportunities and improvement of socio-economic circumstances in the territory. From inception of the program in June, 1978, 159 applications have been received and 54 offers accepted.

Since June, 1978, a total of \$76 000 has been offered under the Regional Development Incentive Act (RDIA), to three projects expected to create nine jobs in Yukon.

Plans for 1981-82

Current agreements and programs are continuing and increased activities are expected under the Special ARDA and RDIA.

Planning and negotiations with the Yukon Territorial Government and other federal agencies under the General Development Agreement are under way to produce a more comprehensive approach to development which will emphasize assistance and human resource development. ■

Customs and Excise

Responsibilities

Customs controls the international movement of goods, persons and conveyances and collects duties and tax due on imports.

Excise administers the provisions of the Excise Tax Act, the Excise Act, the Importation of Intoxicating Liquors Act and related regulations. The branch issues licences, provides tax information and audits the records of businesses subject to payment of federal sales and excise taxes.

Review 1980-81

Yukon

The Port of Whitehorse administers and enforces Customs laws and regulations throughout Yukon. The territory is serviced by all modern transportation methods engaged in the import and export of goods and the international movement of passengers. To accommodate this traffic, Customs ports are maintained at Beaver Creek, Dawson, Little Gold (summer months only), Old Crow and Pleasant Camp. Customs formalities at Old Crow are performed by the RCMP. These outposts provided service at six locations approved as Customs airports of entry and for the highway sufferance warehouses at Whitehorse. Special arrangements were also made to accommodate river traffic leaving and re-entering Canada on the Yukon-Porcupine River route.

Excise carries out its responsibilities in Yukon by means of periodic visits by Excise auditors to licensed businesses in such communities as Whitehorse, Ross River, Keno Hill, Dawson, Watson Lake and Faro. There are 32 Excise licensees in the territory. In 1980-81, two Excise auditors visited licensees in the Whitehorse area to conduct audits, provide tax information and, as required, assist in the processing of refund claims.

Northwest Territories

In view of increased activities in the eastern arctic, a Customs inspector was assigned to Frobisher Bay on a trial basis from July through October. As the volume of business transacted during this period clearly indicated a requirement for full time Customs representation, the department established a permanent office, staffed by a full time Customs inspector, under the purview of the Port of Ottawa.

During 1980-81 Edmonton Customs maintained an outpost at Inuvik, staffed by a full time Customs employee. Members of the RCMP at a number of other settlements continued to provide service under the guidance of Customs headquarters. Service at these locations is, however, primarily restricted to inward passing and outward reporting Customs formalities.

During the year exploration activities, both of a commercial (the development of oil and mineral resources) and non-commercial nature (geographical, scientific and mountaineering expeditions) continued with increased intensity. These activities, with increased cargo deliveries, required closer surveillance and monitoring by Customs. During this period an officer travelled from Ottawa on several occasions to examine these aspects.

There was a significant increase in the volume of imported and exported cargo. The main shipping activity concerned the delivery of oil exploration and mining supplies as well as petroleum products to numerous locations in the territories, particularly the mining community of Nanisivik. Special arrangements were developed and implemented to accommodate offshore drilling activities in the Beaufort Sea and Baffin Island areas.

Locations for Customs service in the Northwest Territories, other than the Inuvik and Frobisher Bay locations previously mentioned, are listed under the government department whose employees perform Customs duties.

Royal Canadian Mounted Police

Baker Lake	Pangnirtung
Cambridge Bay	Pond Inlet
Clyde River	Resolute Bay
Coppermine	Sachs Harbour
Eskimo Point	Spence Bay
Grise Fiord	Tuktoyaktuk
Lake Harbour	Yellowknife
Nanisivik	

Department of National Defence

Cape Dyer	Hall Beach
Cape Parry	

Department of Environment

Eureka	Mould Bay
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Despite increased business activity in the Northwest Territories, the headquarters of business firms having Excise licences are located mainly outside the territories. However the branch does have 16 licensees in the NWT and in 1980-81 three visits were made to Yellowknife, Hay River and Fort Smith by Excise representatives who conducted audits, processed refund claims, provided tax information and inspected the operation of a bonded warehouse. The following shows where departments, other than Customs and Excise, look after Customs' duties.

Plans for 1981-82

Due to increased commercial activity in the territories and the arctic archipelago, the adequacy of Customs and Excise control will continue to be examined and monitored to determine the requirements for staffing, surveillance and service. ■

Royal Canadian Mounted Police

RCMP

"G" Division

Responsibilities

The Royal Canadian Mounted Police "G" Division provides policing to the Northwest Territories under contract to the territorial government. These services encompass both federal and territorial police responsibilities. While the headquarters is in Yellowknife, there are three sub-divisions, 36 detachments, and air detachments at Yellowknife, Inuvik, and Frobisher Bay.

Review 1980-81

Although the Northwest Territories continued to have the highest crime rate per capita, the overall crime rate was stable. While crimes against persons were down 14 per cent, crimes against property were up one per cent as the remainder of offences against the Criminal Code made up the difference. Most of the serious crimes occurring in the Northwest Territories were related to alcohol.

The Regular Patrol Service (RPS) to settlements without permanent detachments worked well. Of 63 settlements in the NWT, 27 are served by RPS. Fourteen of these 27 have police patrol cabin facilities.

Efforts continued in 1980-81 to recruit native people as special constables, three were posted to Clyde River, Baker Lake, and Sanikiluaq. As of the end of 1980, there were five vacancies for special constables in the central and eastern arctic.

The Option 3 (b) Special Constable Program is being implemented in concert with the Native Policing Coordinator. Two applicants were being processed as of the end of 1980.

Plans for 1981-82

New construction planned in the coming year includes: detachment building at Coppermine, detachment building at Tuktoyaktuk, two married quarters units at Tuktoyaktuk, one married quarters unit at Fort Franklin, one patrol cabin at Nahanni Butte.

Plans are under way to install married quarters for the Option 3 (b) Program at Fort Rae, Fort Resolution, Aklavik, and Tuktoyaktuk in 1982-83.

"M" Division

Responsibilities

The Royal Canadian Mounted Police "M" Division provides policing to Yukon. Under contract to the territorial government, the RCMP enforces the Criminal Code and Territorial Ordinances and provides a federal role through enforcement of various statutes and regulations.

There are 12 detachments in Yukon, with Division Headquarters located in Whitehorse.

Review 1980-81

The overall crime picture in Yukon showed an eight per cent increase over the previous year, however non-traffic Criminal Code offences accounted for only 1% of the increase. Federal Statute Offences were primarily responsible for the bulk of the difference.

Territorial Traffic Offences were 14% greater than the past year and reportable traffic accidents increased by 150 from 1082 to 1232. There were 16 traffic fatalities.

The Native Policing Program for Yukon continued to employ eight special constables at various detachments throughout the territory. Long range plans are to increase this number to 18. While continuing to be a high priority program, it has proven difficult to attract and/or retain applicants.

An On-The-Job Training Program, sponsored by the Department of Indian Affairs and Northern Development, was successfully used to prepare potential native recruits and clerk/stenos for employment.

The Summer Student Employment Program engaged seven university students as supernumerary special constables during the summer of 1980. The division will continue with the program in 1981.

The territorial government owned and maintained VHF radio system, providing coverage of all communities and major highways within Yukon, is now the primary radio network used by the RCMP. It also provides a communication link with the RCMP in Inuvik and Fort McPherson, NWT, and Atlin, British Columbia. The last of the SSB radios were removed from service during 1980.

A new married quarters building was constructed and placed on site at Dawson City. It will be supplied with an historic facade during 1981 to complement the program being pursued by Parks Canada.

Plans for 1981-82

"M" Division will host a tour by the RCMP Band to most Yukon communities during September.

The detachment's new building at Watson Lake is to be completed while construction of the new buildings at Dawson City and Haines Junction will commence. A new married member's residence will be constructed in the private sector of Haines Junction to replace the one demolished with the detachment/quarters building.

Providing funds are available, other renovations and additional construction will proceed. ■



Responsibilities

Statistics Canada is the country's central statistical agency responsible for collecting, analysing and publishing data on almost every social and economic activity in Canada. It maintains an ongoing program of consultation and liaison with the Governments of Yukon and the Northwest Territories and offers technical support for the statistical activities those governments conduct.

Review 1980-81

Preparations continued for the 1981 census, Statistics Canada's largest single undertaking. Early enumeration took place in some areas 10 to 12 weeks before the official June 3 census. This was because climatic conditions in June are often unfavourable for transportation and by that time populations in winter settlements have begun their seasonal migration. A media campaign promoted awareness of the early census. Radio commercials were aired in the languages of various northern audiences over all CBC northern stations. Television commercials were broadcast in English and Inuktitut over CBC and on the "Inukshuk" television service.

As part of the census program, basic methodology was formulated to measure 1981 census undercoverage (missed persons) in Yukon and the Northwest Territories.

During the year, Statistics Canada began studying the feasibility of extending the current Labour Force Survey to Yukon. A survey design was developed which will be flexible enough to deal with the special difficulties posed by Yukon labour market. Arrangements were concluded to conduct a pilot test of the survey in July, 1981.

The bureau also began looking at the possibility of establishing a Consumer Price Index (CPI) for Whitehorse and Yellowknife.

Plans for 1981-82

Statistics Canada will conduct the 1981 census June 3 in areas of the North that did not undergo early enumeration.

All households in the North will receive the long questionnaire normally distributed to every fifth household in the rest of Canada. The low density of population and the need for information on these rapidly-changing communities make it impossible to use the sampling method applied elsewhere.

In larger northern communities such as Whitehorse, Yellowknife, Hay River, Fort Smith, Pine Point and Inuvik, questionnaires will be delivered to households and picked up later, while in other areas enumeration will be by personal interview. Census representatives will be chosen, where possible, from the communities to be enumerated.

The June 3 census will be supported by radio and newspaper advertisements in Yukon and the Northwest Territories.

Data from the 1981 census will provide information vital to planning local services, administering legislation and evaluating social programs for the northern population. After census data have been collected, experimental studies will be conducted on 1981 census undercoverage in Yukon and the Northwest Territories.

The pilot test on the Labour Force Survey designed for Yukon will begin in July, 1981, and continue for 12 to 15 months, while operational problems are ironed out. The quality of data collected during the test period will be assessed to determine what Yukon labour force information will be made available on a regular basis.

The investigation of the feasibility of establishing a CPI for Whitehorse and Yellowknife will continue to determine if and when a CPI for the two cities will be introduced. ■

Citizenship Sector

Responsibilities

The Citizenship Sector of Secretary of State plans and administers programs to encourage effective Canadian citizenship and coordinates the formulation and development of national strategies and policies affecting citizenship. The programs promote effective citizen participation in Canadian society, encouraging both cultural awareness and diversity in a bilingual framework.

Review 1980-81

The Northwest Territories program was administered through the department's Manitoba Regional Directorate. During the year an office of the Department of the Secretary of State was opened in Yellowknife with a staff of area director and two native trainees.

The Native Citizen's Directorate provided technical and financial support to native associations, women's groups, friendship centres, social and cultural development projects, communications societies, and film and slide productions for remote communities. A new friendship centre was opened on Vale Island at Hay River, NWT.

The Multiculturalism Ministry's advisory body, the Canadian Consultative Council on Multiculturalism for the first time held public meetings in both Whitehorse and Yellowknife.

Plans for 1981-82

The Yukon program, administered through the Pacific Regional Office, will receive an office, staffed by an area director and native trainee, April 1, 1981. In addition a senior field officer of native background will be appointed with responsibilities for coordinating the department's activities related to native citizens in northern British Columbia and Yukon.

A friendship centre is planned for Fort Smith in the Northwest Territories.

The Official Language Minority Groups Directorate will be supporting groups in Yukon for the first time. A Franco-Yukon citizens group is developing and a chapter of Canadian Parents for French will hold a conference.

The five-year agreement on Official Languages in Education expired in March, 1979, and interim arrangements were made for financial assistance to the territories as well as the provinces for 1979-80 and 1980-81.

Review 1980-81

The Quebec Regional Office worked closely with two associations: Nunatsiakmiut and the Baffin Region Inuit Association (BRIA). Nunatsiakmiut, a communications society, produced 15-minute video programs for broadcasting on the CBC's Northern Network. A grant of \$159 550 was provided for this work. BRIA is the political association for the Inuit of Baffin Island and received a contribution of \$236 997.

With the assistance of these two associations, discussions were launched with local communities to establish a friendship centre in Frobisher Bay and a Native Women's Association.

Plans for 1981-82

Among activities planned are the establishment of a friendship centre, the creation of a women's association, a follow-up to BRILA activity, the coming together of francophones and their affiliation with a territories association.

Language Programs Branch

Responsibilities

The programs provide opportunities for persons to acquire knowledge of both official languages. They also enable members of the official language minority in each province or territory to study in their mother tongue.

The programs also help provincial, territorial and municipal administrations develop the ability to serve the public in both official languages.

Review 1980-81

At the request of the two territorial governments, the branch renewed, for the sixth consecutive fiscal year, its assistance towards the official languages programs of each Department of Education. The maximum total allocation was \$220 250.

In the Northwest Territories, funding made possible the hiring of a French language coordinator and:

- study fellowships to post-secondary students;
- remuneration for full-time monitors to assist French language teachers;
- text books and other resources for teaching French;
- in-service training for French language teachers;
- bursaries to French language teachers.

In the Yukon, federal assistance for French language programs helped to provide:

- French immersion classes in Whitehorse;
- the salary for a full-time coordinator of French courses;
- full-time French language monitors;
- bursaries for French language teacher training;
- support for the expansion of in-service training programs and career development programs for teachers;
- bursaries for post-secondary students to take part in summer immersion courses in an official language.

Assistance was also used to support a series of non-credit adult education immersion courses and a 10-day methods course for elementary teachers. ■

Department of Transport

DOT



Extreme arctic temperatures affect the properties of steels used in ship construction.

Arctic Transportation Directorate

Responsibilities

The Arctic Transportation Directorate develops, promotes and coordinates plans and programs for transportation services and terminal facilities in Yukon and Northwest Territories. This coordinating role involves consideration of the activities of federal government departments and agencies, the Governments of Yukon and Northwest Territories, industry and the public. The directorate also develops and implements policies related to transportation in the arctic.

Review 1980-81

During the year, the directorate was involved in a wide range of projects associated with different modes of transportation in the arctic. The directorate worked with the Canadian Surface Transportation Administration and other federal departments, developing a proposal to assist the White Pass and Yukon Railway. This involved negotiating with other parties interested in participation in the assistance package.

The directorate, representing Transport Canada on the federal government negotiating teams involved in the native land claims processes, took part in negotiating sessions with other federal officials.

A policy for providing arctic marine facilities and services was developed and submitted to senior management.

The subject of dredging sections of the Mackenzie River was revived during 1980-81. A review of the 1976 cost-benefit study began, and discussions were held with officials of the Northern Transportation Company Limited (NTCL).

The review of the 1974 air facilities policy continued. A status report, prepared jointly with Air Administration, was dispatched to Treasury Board. Another joint document, setting out future policy options and costs, was distributed to government, industry and the public in January, 1981. Consultation with these groups will continue in 1981-82.

The report on the 1978-79 survey of arctic passenger travel trends was completed and circulated to the aviation industry. A complete analysis of the Calmair Keewatin route system was undertaken for the Government of the Northwest Territories.

A review of aviation weather requirements in Yukon and Northwest Territories was undertaken to develop a joint Transport Canada and Environment Canada resource plan for the continued provision of necessary weather information services and for their future expansion. The report was finished and the resource plan is being completed.

The suitability of the present technology for snowmobiles is being examined in conjunction with the Transportation Development Centre.



M.V. Polarhav preparing for arctic testing of detection system.

Transportation and Research Directorate

Transportation Research and Development

Responsibilities

The Research and Development Directorate of the Strategic Planning Group is responsible for federal policy consultation, coordination, and planning of transportation research and development. It also has operating responsibility through the Transportation Development Centre (TDC) in Montreal, which undertakes R&D projects for the three operating administrations. Further, through its Strategic Studies Branch, the directorate funds energy-related transportation R&D projects.

Review 1980-81

Arctic marine transportation was identified as the foremost priority for Transport Canada R&D. An interdepartmental working group reviewed the status of and further needs for R&D. This provided the basis for a five-year Arctic Marine Transportation R&D Plan (1981-82 to 1985-86).

TDC's arctic-related R&D in 1980-81 was directed towards improving icebreaking vessel design and operation. Design-oriented R&D projects included the ice performance evaluation program for the icebreaking bulk cargo vessel MV Arctic; investigation of ice-induced vibration in propulsion systems using the United States Coast Guard icebreaker Polar Sea as an experimental platform; continued study of propeller protection in ice and studies into steel properties and special steels for arctic class ships.

Continued R&D related to ship operations included the ongoing development of the combined synthetic pulse-impulse radar for remote sensing of sea ice thickness, the development of an iceberg hazard detection system using multiple sensors and the 60 kW high intensity plasma light to facilitate icebreaking in darkness. New projects in 1980-81 included preparation of a directory of ice navigation information and compilation of a list of ongoing Canadian marine R&D studies.

The major projects funded under the R&D energy program were the arctic probe by CCGS Louis St Laurent, hull structural steel testing for arctic class vessels, an arctic ice atlas and development of ice detection and collision avoidance sensors.

Railway Transportation

Responsibilities

The Railway Transportation Directorate formulates policy proposals and ensures that the operation, planning and regulation of railways meet national needs and government policy. It also plans and implements railway programs consistent with such objectives, provides the government with railway information, conducts liaison with industry and provincial governments, and ensures that adequate resources are available for the continued improvement of the railway system.

Review 1980-81

The directorate was part of a group constituted by the Minister of Indian Affairs and Northern Development to develop a program of capital assistance for the White Pass and Yukon Railway.

The formulation of a long-term railway development strategy for the Yukon, which was deferred pending resolution of the financial problems of the White Pass and Yukon Railway, will begin again in 1981-82.

Water Transportation Assistance Directorate

Responsibilities

The Water Transportation Assistance Directorate subsidizes essential water transport services where full cost recovery rates are impractical.

Review 1980-81

The directorate's main arctic activity, subsidization of the NTCL barge services from Churchill to the Keewatin ports, amounted to \$420 000.

Canadian Surface Transportation Administration

Surface Policy, Planning and Urban Programs

Responsibilities

The branch manages the Urban Transportation Assistance Program (UTAP) which shares the cost of studies and capital works designed to improve the efficiency of urban transportation systems.

Review 1980-81

New buses were acquired for Whitehorse, Hay River and Frobisher Bay.

Highway Transportation

Responsibilities

The Highway Branch negotiates and manages cost-shared highway programs and studies their interrelationship with other modes of transportation. The branch heads the Inter-departmental Highway Committee, which reviews proposed federal highway investments south of 60°, as well as the Inter-departmental Committee on International Bridges, which coordinates all policy questions pertaining to bridges linking Canada and the U.S.

Review 1980-81

While the financial restraint program led to the cancellation of some branch programs, ongoing advisory services were not affected.

Canadian Marine Transportation Administration

Responsibilities

The Canadian Marine Transportation Administration (CMTA) ensures the efficient and safe development and operation of the national marine transportation system. The administration comprises the Canadian Coast Guard, the National Harbours Board, the Ports and Harbours Directorate, the St. Lawrence Seaway Authority and the Atlantic, Laurentian, Great Lakes and Pacific Pilotage Authorities. In the arctic, the administration provides facilities and services for commercial and resupply shipping.

Canadian Coast Guard

Responsibilities

The Canadian Coast Guard (CCG) coordinates the delivery of cargo to northern communities for the Canadian government, the United States Air Force (USAF), and Canadian commercial interests. It provides ice and routing information and ice-breaker support and carries out environmental research and surveys; installs, operates and maintains aids to marine navigation and a network of Coast Guard radio stations; carries out search and rescue operations; and administers the Navigable Waters Protection (NWP) and Arctic Waters Pollution Prevention Acts (AWPPA).

Review 1980-81

The Canadian Coast Guard coordinated and conducted the annual resupply in the eastern arctic, helping ships deliver fuel, equipment and other commodities to isolated bases, communities and defence radar sites. It also provided ice routing and icebreaker escort to commercial shipping, particularly on the Hudson Bay route to Churchill, and to ships calling at Frobisher Bay, Strathcona Sound, Resolute Bay, Rae Point, Little Cornwallis Island, Eureka and at sites in Foxe Basin. Eight Coast Guard icebreakers were deployed for last year's resupply operations and specialized projects.

On May 21, CCGS *J.E. Bernier* sailed from Quebec City to Victoria, via the Panama Canal, becoming the first Canadian Coast Guard vessel to have twice circumnavigated the North American continent. The *Bernier* left Victoria July 5 to provide icebreaker escort to shipping engaged in the annual western arctic resupply of the DEW Line sites. When those duties ended, the *Bernier* proceeded through the Northwest Passage, en route assisting the survey vessel *Pandora II*. Both vessels successfully made the transit of the Northwest Passage through Queen Maud Gulf, Simpson Strait, James Ross Strait and Peel Sound, arriving at Resolute Bay September 20. From there the *Bernier* sailed south, arriving at Quebec City September 29. The most memorable event of the *Bernier's* voyage occurred August 14, when Governor General Edward G. Schreyer boarded the vessel at Cambridge Bay to present the commanding officer with a certified true copy of a vice-regal proclamation commemorating the Arctic Islands Centenary.

In mid-August, CCGS *John A. Macdonald* was assigned to support Undersea Research Ltd., assisting a group of scientists searching for the wreck of the British ship, HMS *Breadalbane*. Undersea Research Ltd. which had tried during the three previous summers to locate the ship crushed by ice August 21, 1853, while searching for the Sir John Franklin expedition, located the wreck of the *Breadalbane* in August in the waters surrounding Beechy Island, southwest of Devon Island.

CCGS *John A. Macdonald* also was involved in an extensive scientific program for the Defence Research Establishment Pacific (DREP). The vessel struck an uncharted shoal while assigned to deliver drummed fuel to Baumann Fiord. Damage was not serious enough to hinder operation in light ice conditions and the vessel was retained in Jones Sound to complete the DREP project.

In early July, CCGS *Franklin* left St. John's for Cape Hatt in support of the Arctic Marine Oilspill Program (AMOP), an interdepartmental technology program under the management of Environment Canada. In conjunction with this program, the *Franklin* was involved in a hydrographic survey off Cape Hatt. In mid-August, the vessel was released from this assignment to support shipping activities at Little Cornwallis Island.

The other icebreakers involved in arctic operations, CCGS *Norman McLeod Rogers*, CCGS *d'Iberville* and CCGS *Pierre Radisson*, performed normal support to shipping, while CCGS *Labrador* was assigned to hydrographic work for the Department of Fisheries and Oceans.

Some 106 commercial vessels, including tankers, supply cargo and research vessels, proceeded into Canadian arctic waters during this season, with 62 requiring icebreaker assistance.

The MV *Arctic*, operated by Canarctic Shipping Co. Ltd., made two trips to Nanivisik in Strathcona Sound to load zinc concentrates for Europe. On her first voyage in the last week of July the vessel was assisted by CCGS *John A. Macdonald* but was unescorted on her last voyage in early October. In early September, escorted by CCGS *Franklin*, the *Arctic* also made a trip to Little Cornwallis Island to deliver 12 000 tonnes of supplies and equipment to Cominco Mines Ltd.

In early November, when ice trials in Eclipse Sound and Admiralty Inlet were completed, the *Arctic*, assisted by the *Franklin*, proceeded to Churchill, Manitoba, to load grain for Italy. The *Arctic* cleared Hudson Strait on November 14 and the *Franklin* on November 16 after deactivating the navigation aids.

On October 24, the Canadian Coast Guard's largest and most powerful icebreaker, CCGS *Louis St. Laurent*, headed into the arctic on a scientific data gathering mission to learn more about the forces and pressures on a ship's hull when navigating in ice. The data will be used by the Coast Guard's Ship Safety Branch to update the regulations governing the design and construction of vessels which will ply arctic waters in future. The *St. Laurent* returned to Dartmouth November 26.

Eastern arctic sealift operations used the services of four commercial dry cargo carriers with nine dry cargo vessels and one bulk fuel carrier operating five vessels. The 43 points of delivery, including civil settlements, DEW Line and scientific sites in Canada and Greenland, were supplied with a total of 9 974 tonnes of dry cargo and 40 457 tonnes of bulk petroleum, oil and lubricants. A further 87 tonnes of cargo were transported between arctic sites and 150 tonnes were transported south to Montreal and Ogdensburg, N.Y.

The NORDREG/ECAREG Vessel Traffic Management System and the Frobisher Bay Ice Office monitored operations and tracked shipping movements, providing ice information, ice routing services and allocating icebreaker support.

During the season 114 vessels, including the Coast Guard ships, used the Arctic Canada Traffic Zone. Six vessels sustained damage, six were defective, one lacked the necessary charts and publications and four committed minor pollution incidents.

The Coast Guard concluded a study of the maritime mobile communications service in those areas above 55°N latitude and including the Labrador coast. The findings of this study are being used as the basis for a more efficient and effective safety, public correspondence and Coast Guard administrative communications system to be provided by Coast Guard radio stations in the arctic.

The Coast Guard monitored Beaufort Sea drilling operations in cooperation with the Department of Indian Affairs and Northern Development. The Coast Guard's monitoring was directed to ensuring the safety of ship operations and the prevention of pollution by ships.

National Harbours Board

The National Harbours Board leases facilities to NTCL for its barge resupply operations to communities on the west coast of Hudson Bay. The National Harbours Board provides facilities and services for the loading of grain into vessels for commercial shipments overseas.

Ports and Harbours Directorate

CMTA administers certain public port facilities north of 60°, particularly along the Mackenzie River system and in small coastal communities from the Admundsen Gulf to Ross Strait in the western arctic. These facilities are in addition to those provided by the private sector. Facilities in the western arctic generally suit barge traffic originating on the Mackenzie River system. There were no major changes to these facilities in 1980 and none are planned for 1981.

In the eastern arctic, the only public port facility is at Nanisivik in Strathcona Sound on Northwestern Baffin Island. Last year was the third full season of operation for the facility. A shiploader and conveyor system was provided by Nanisivik Mines Ltd. for loading mineral products. The facility can be used by vessels of up to about 50 000 tonnes deadweight.

Research and Development

Within CMTA, R&D is undertaken in the area of transportation technology to support the department's objective of development of the Canadian marine transportation system.

Marine R&D is directed towards increasing the safety and technological efficiency of marine transportation and identification of technically feasible options to support specific program needs. The marine R&D program involves other governments, industry and universities. It focuses on such critical marine technology areas as vessels (standards and regulations), navigation and communications systems, emergencies, salvage, search and rescue, pollution prevention and cleanup.

Emerging concerns for energy security, sovereignty and safety added a new focus to R&D in 1980-81.

Discussions began with the United States to promote cooperation and the exchange of information on navigation in ice, vessel vibration and stress. The continuing use of the *MV Arctic*, Canada's only ice-strengthened bulk carrier, for ice trials has yielded valuable information on the standards which should apply to vessels operating under arctic conditions. Additional probes by the Canadian icebreaker, *Louis St. Laurent*, yielded similar data. Much of this information will be used to develop standards and regulations for the construction of arctic class vessels and design specifications for nuclear-powered Polar Class icebreakers.

CMTA initiated a wide range of projects in cooperation with the marine shipping and ship-building industries. The Marine Advisory Board is CMTA's primary link with the industries and provides direct feedback on the industries' priority concerns in the arctic and elsewhere. Under auspices of this board, CMTA has undertaken significant R&D into ice hazard detection, remote ice sensor systems, ship ballasting in ice conditions, hull corrosion, friction-reducing systems, alternative energy supplies for navigational aids and the need for simulators to train ships' personnel.

Canadian Air Transportation Administration

The Canadian Air Transportation Administration (CATA) is responsible for the national civil air transportation system. CATA's northern activities include airports, air traffic control facilities and services, and navigational aids for domestic and international airway/air routes. The administration also carries out planning for northern air transportation in coordination with the Arctic Transportation Directorate.

CATA has centralized policy making and national systems management and decentralized operations. Thus, the Ottawa headquarters gives national direction to the civil air transportation system and develops related policies, standards and regulations. Six regional offices carry out the day-to-day operations of the system, and three – Quebec, Central and Western – are responsible for CATA's involvement in northern Canada.

Arctic Air Transportation Facilities Policy

The Arctic Air Transportation Facilities Policy, approved in 1974, specifies criteria and standards for arctic airports, classified as category A, B or C. Arctic A airports are major airports owned and operated by Transport Canada, directly or under contract, which serve larger communities and have scheduled jet aircraft operations. Arctic B and C airports, many of which are not operated by Transport Canada, primarily serve smaller communities.

Of the 62 airports currently included in the Arctic Air Facilities Program, 11 are classified as Arctic A and the rest as Arctic B or C. In recent years, expenditures at Arctic A airports have been for new or restored facilities and equipment. Total capital expenditures to the end of 1980-81 were approximately \$24 million, compared with the financial ceiling approved in 1977 of \$56 million. The current approved capital expenditure level for completing the B and C airports program is \$81 million – of which \$44 million had been spent at 38 sites by March 31, 1981. Some 42 B and C airports met Transport Canada licensing standards, compared with 25 when the program began. Major airport development work began at Fort Liard but is still to be initiated at 17 other designated sites.

The review continued of the Arctic Air Facilities Policy initiated in 1979-80 by CATA and the Arctic Transportation Directorate. A draft of the initial findings, dealing with background issues, community eligibility and the facilities to be provided, was completed in January, 1981, and forwarded for comments to the territorial commissioners, federal departments and the aviation industry. The report suggests that the CATA National Airports Classification system be extended to the arctic to replace the separate classification system, that airport facilities be provided only to communities more than three hours surface travel time from an airport with regular commercial air services, and that there be more flexibility in determining runway lengths and other facilities.

A second report, dealing with airport control and administration, administrative responsibilities and financial arrangements, will be completed and circulated for comment as soon as certain legal issues have been resolved. A policy discussion paper should be completed by the fall of 1981.

Civil Aeronautics

The Civil Aeronautics Directorate regulates aviation in Canada and provides air navigation services. This includes designating airways/air routes; determining their associated facilities and developing the related standards; inspecting and calibrating navigational aids; inspecting runways and manoeuvring areas; designing, constructing, installing, operating and maintaining telecommunications and electronic facilities; providing an air traffic control system for Canada and for international airspace for which Canada has accepted responsibility; and funding meteorological services in support of aeronautics.

The regulatory activity includes developing and enforcing aeronautics legislation, standards and procedures; inspecting, examining, licensing and certifying aviation personnel, commercial operators and aircraft; surveillance of aircraft manufacturing and repair; and investigating aircraft accidents and incidents.

Aeronautical Licensing and Inspection Branch

As of December 31, 1980, 569 valid licences and permits were held by persons residing in the Yukon and 561 by persons residing in the Northwest Territories.

The G-II (CG-CFB) continued to carry out flight inspections throughout the arctic and completed a full year of gathering OMEGA coverage information. This information is being collated by the United States Federal Aviation Authority and will be available soon in map form.

Air Traffic Services Branch

Air traffic services (ATS) continued to provide control services for flights operating under instrument flight rules (IFR).

The high level airspace in Canada has been divided into three general air traffic control areas: arctic, northern and southern. Control services were provided to all flights operating within these areas, using the Arctic Track System and the Northern Track System together with the domestic high level airway network. In the low level airspace, control was provided to IFR flights operating along designated airways and within control area extensions.

North of 60° these control area extensions are: Fort Smith (50 nautical mile (NM) radius), Hay River (50), Norman Wells (50), Yellowknife (50), Frobisher Bay (40), Inuvik (40), Whitehorse (40), Fort Simpson (25), Teslin (25) and Watson Lake (25).

Control zones provide additional protection and improved service to the operators at: Fort Simpson (5 NM radius), Frobisher Bay (5), Norman Wells (5), Watson Lake (5), Inuvik (5), Hay River (10) and Fort Smith (10).

Positive control zones with established Transport Canada control towers are located at Whitehorse (5 NM radius) and Yellowknife (5).

Aerodrome traffic zones provide additional protection for aircraft operating at uncontrolled airports. These zones of 5 NM radius are located at Baker Lake, Cambridge Bay, Coral Harbour, Eskimo Point, Eureka, Fort Resolution, Hall Beach, Grise Fiord, Nanisivik, Rankin Inlet, Resolute and Wrigley. ATS operates a discrete telephone circuit from the Edmonton Area Control Centre (ACC) to Cambridge Bay, NWT, with switching

arrangements there to the Reykjavik ACC in Iceland and to the Anchorage Air Route Traffic Control Centre in Alaska.

Following recommendations made at the United North Atlantic Radio Navigation (LIM-NAT-RAN) meeting in January, 1979, the omnibus circuit serving Edmonton, Frobisher Bay, Moncton and Gander was extended to Reykjavik during 1980. It was also extended to Fort Chimo, Quebec, for Moncton ACC domestic en route flight coordination.

The Automatic Data Interchange System (ADIS) service was extended during January, 1981, to the Rankin Inlet flight service station via an ANIK circuit. The Poste de la Baleine ADIS service was removed from the ANIK circuit and is being served by a terrestrial microwave circuit.

Telecommunications and Electronics Branch

The Telecommunications and Electronics Branch operates a network of flight service stations (FSS) in the Northwest Territories and Yukon. These stations are manned by 128 flight service specialists who provide aeronautical communications and related flight services to the northern aviation community. To supplement the service provided by manned stations, a number of remote communications outlets (RCOs) have been established at locations such as Fort Good Hope and Wrigley. Finally, CATA and the Government of the Northwest Territories (GNWT) have developed jointly a system of 21 community airport radio stations (CARS). These stations are operated by native northerners, with technical guidance, advice on operating standards and personnel training provided by CATA.

In February, 1981, a new 24-hour FSS was opened at Rankin Inlet. The FSS at Chesterfield Inlet was replaced by a CARS.

A new RCO will be commissioned at Hall Beach in April, 1981. This facility, controlled from the Coral Harbour FSS, will be the first aeronautical remote communications outlet operated through the ANIK satellite and will expand radio coverage in the northern areas of Foxe Basin.

A new camera system to improve runway visibility at the FSS operating position is being tested at Frobisher Bay. If it is successful, flight service specialists will be able to provide better advisory services. A new radioteletype link, to be



Plasma high intensity light source.

completed in May, 1981, also is being established at Frobisher Bay, to provide a direct hook-up between the FSS and the CARS at Clyde River.

Transport Canada and the Department of Indian Affairs and Northern Development will sponsor a joint special flight service specialist training program for native northerners. The program, to begin in mid-1981, will increase opportunities for northerners in this field.

Arrangements have been completed for the formal transfer of responsibility for observer/communicator telecommunications training from Transport Canada to the Government of the Northwest Territories, effective April 1, 1981. At the same time, a new program for certifying these personnel will be put in place.

During 1980-81, aids to navigation were installed at Aklavik, Fort Simpson and Baker Lake. In addition, a new solid state Instrument Landing System (ILS) was commissioned at Watson Lake and another replaced the tube type ILS at Whitehorse.

The automated Loran-C monitoring equipment, scheduled for installation at Inuvik with the Differential OMEGA station, was postponed. A decision on the installation will be made later.

Aviation Safety

Federal government departments which send employees to the North continued to conduct survival training programs. The Aviation Safety Bureau advises government departments on these programs. It continued to emphasize compliance by commercial operators with Air Navigation Order Series V, No. 12, Sparsely Settled Areas Order, which includes a list of required survival equipment.

Airports and Construction Services

The Airports and Construction Services Directorate provides, maintains and operates the National Airports System, and plans, designs, constructs and maintains all airport facilities (except equipment for non-visual aids to navigation and air traffic services).

The directorate plans and coordinates all activities relating to airport operations, levels of service, services and facilities. This includes developing policies and guidelines for the operation and security of airports; developing policies and standards for the planning, design, construction and maintenance of airport facilities; providing advisory assistance to community airports; providing engineering and architectural support to CATA installations, both on and off airports, and to other sections of Transport Canada, federal agencies and territorial government organizations.

The directorate develops training programs, policies and standards which support the Arctic Transportation Policy, particularly the Arctic B and C airports program.

Quebec Region

One Arctic A (Frobisher Bay) and seven Arctic B and C airports are located within Quebec Region. Improvements were completed at six Arctic C airports, and the terminal facilities at Broughton Island should be completed by the summer of 1981.

Arctic airport master plans were prepared and submitted to the GNWT and to CATA headquarters.

Negotiations between hamlets and the GNWT have produced modifications to airport boundaries at some locations. A legal land survey was carried out at Pond Inlet, and four other sites are to be surveyed during 1981-82.

Review 1980-81

Broughton Island: The air terminal building (ATB) was installed. Construction of the new apron and taxiway began. A snowblower has been provided. The air/ground communication equipment and the inside meteorological facilities were installed and the outside components of the meteorological facilities erected. The preliminary surveys for the visual approach slope indicator system (VASIS) and the new lighting system were done.

Cape Dorset: The preliminary land survey for the installation of a VASIS was completed.

Clyde River: The preliminary survey for the installation of a VASIS was completed. Problems remain with the maintenance garage and, as the contractor has not corrected these deficiencies, the department has not accepted the building.

Pangnirtung: The preliminary survey for the installation of a VASIS and a replacement lighting system was completed.

Pond Inlet: A legal land survey of the airport territory was done through PWC. This will permit the official land transfer to the GNWT. The preliminary survey for the installation of a VASIS was completed.

Sanikiluaq: The preliminary survey for the installation of a VASIS was completed.

Frobisher Bay: A VOR receiver test facility (VOT) was installed and the "F" beacon transmitter refurbished with increased output power. Two HF 5 kW transmitters on ICAO frequencies were replaced together with all UHF transmitters and receivers.

Plans for 1981-82

Broughton Island: Complete apron and taxiway, install refuelling kit, install a VASIS, replace runway lights and carry out a legal land survey.

Cape Dorset: Install a VASIS and carry out a legal land survey.

Clyde River: Relocate the access road which crosses the runway in front of the apron, install a VASIS, and carry out a legal land survey.

Frobisher Bay: Replace the ILS glide path and localizer, and replace mobile equipment.

Lake Harbour: Carry out a legal land survey and install the NDB.

Pangnirtung: Replace the runway lighting system and install a VASIS.

Pond Inlet: Install a VASIS.

Sanikiluaq: Install a VASIS.

General: Install apron flood-lighting at all Arctic C airports in Quebec Region.

Central Region

One Arctic A airport (Resolute Bay) and 14 Arctic B and C sites are located within Central Region. Airport runways and the related facilities development have been or are essentially completed at Rankin Inlet, Eskimo Point, Chesterfield Inlet and Whale Cove. Airport construction at Repulse Bay and Nanisivik has been delayed due to funding constraints. Runway development at other sites such as Hall Beach and Pelly Bay is scheduled for completion by 1985-86.

Runways are approximately 1500 m long at Arctic B airports and 1000 m long at Arctic C airports except: Baker Lake (1280 m), Eskimo Point (1219 m), Grise Fiord (610 m), Hall Beach (1530 m), Nanisivik (1951 m) and Rankin Inlet (1524 m).

Graduates of the northern observer communicator training program work at nine Central Region B and C airports and 10 sites have trained airport maintainers. In the near future an observer will be acquired for Chesterfield Inlet.

Review 1980-81

Baker Lake: The apron expansion project was initiated. The sewage system project was put into operation. A hydrogen building for Atmospheric Environment Services operations was erected. A VHF/DF was installed.

Coral Harbour: A VASIS was installed and the high intensity runway approach lighting equipment was shipped to the site for future installation.

Gjoa Haven: Preliminary design work on runway, apron and taxiway development was completed. The construction camp and equipment was relocated from Spence Bay to Gjoa Haven.

Grise Fiord: The runway development project was completed.

Hall Beach: Construction was completed of the refuelling garage.

Igloodik: The deficiencies in the passenger/cargo shelter were corrected. A contract was awarded for runway construction.

Rankin Inlet: An earth dyke was completed around the aviation fuel dispensing units and storage tanks. Access roads were completed to the VOR and VHF/DF pads. Work continued on the VHF/DF and the VOR/DME.

Resolute Bay: A DME was established at the ILS glide path to compensate for the lack of an outer marker.

Spence Bay: The runway extension development was completed by the GNWT.

Whale Cove: A 1067 m x 60 m runway was completed.

Plans for 1981-82

Baker Lake: Complete expansion of the apron and aircraft parking area.

Coral Harbour: Install high-intensity runway approach lighting and construct a field electrical centre.

Gjoa Haven: Tender for runway construction.

Grise Fiord: Relocate the NDB.

Hall Beach: Erect a maintenance garage.

Igloodik: Complete runway, apron and taxiway development.

Nanisivik: Finish airport development work.

Rankin Inlet: Complete the gravel crushing project for resurfacing and strengthening the runway.

Spence Bay: Purchase material to construct a terminal/operations building, install a medium-intensity lighting package and the appropriate meteorological facilities.

Whale Cove: Erect a field electrical centre and install medium-intensity lighting, VASIS and a power plant.

Western Region

Upgrading and development continued at the nine Arctic A and 30 Arctic B airports in Western Region.

Liaison between Transport Canada, the Northern Pipeline Commission and involved communities produced an infrastructure to coordinate air traffic along the pipeline route and to reduce detrimental effects which may occur in levels of service between pipeline and non-pipeline activities.

The region continued to transfer appropriate flight service stations to Arctic Community jurisdiction staffed by observer/communicators. Airports now staffed and operational are Faro and Old Crow, YT, and Aklavik, Fort Resolution, Fort McPherson, Fort Good Hope, Holman and Wrigley, NWT. Responsibility for Sachs Harbour will be transferred to the GNWT on April 1, 1981, and Teslin later in 1981.

Review 1980-81

Aklavik: Installed temporary field lighting and started permanent runway lighting. The airport boundary fence was completed and an NDB installed.

Burwash: Work began on the installation of apron and taxiway lighting. A taxiway was constructed and apron preparation work completed.

Cambridge Bay: The gravel runway surface improvements, repairs to the roofs of several buildings and work on the fire training area were completed.

Coppermine and Dawson: Equipment to operate the vehicle ground advisory service was purchased and installed.

Faro: A passenger overflow modular waiting room (3 m x 13 m) became operational and a low intensity runway lighting installation neared completion. A feasibility study for airport expansion was undertaken under the direction of the Town of Faro and the YTG.

Fort Liard: Airport development began with runway, taxiway, apron and graded areas completed. Brush clearing was carried out to meet zoning requirements.

Fort Norman: Runway, taxiway and apron surfaces had gravel overlays applied. A temporary field lighting kit was installed and is operational.

Fort Smith: The airport access road and the public car parking lot were paved and the taxiway between apron 1 and 2 was resurfaced. Renovations to the ATB were completed. The airport security compound was completed and a new AES upper air building and a fire training area constructed.

Hay River: Major repairs to runway 12-30 were completed and a safety fence was erected.

Inuvik: Repairs to taxiway A were completed.

Mayo: Upgrading of the taxiway, runway and apron was substantially completed by the Yukon Territorial Council.

Old Crow: Two windsocks and a rotating beacon were installed. A survey to determine actual zoning violations was completed.

Sachs Harbour: The runway, taxiway and apron earthwork were completed and the refuelling facility put in place. VHF and HF communications equipment was installed.

Teslin: The NDB was relocated onto airport property.

Tuktoyaktuk: The runway extension and gravel overlay were completed.

Whitehorse: The concept for the new air terminal building was presented to the Airport Consultative Committee and the airlines. Medium intensity lighting on taxiway E was completed, as were security fencing and a new sewer/water system. A second baggage claim area was finished and the ground access road paved.

The ILS equipment for runway 31 was replaced by solid state components and commissioned.

Yellowknife: A light aircraft parking area was completed. Some brush clearing and levelling was finished and a safety fence installed. New equipment, including a high-speed runway sweeper, was acquired.

Plans for 1981-82

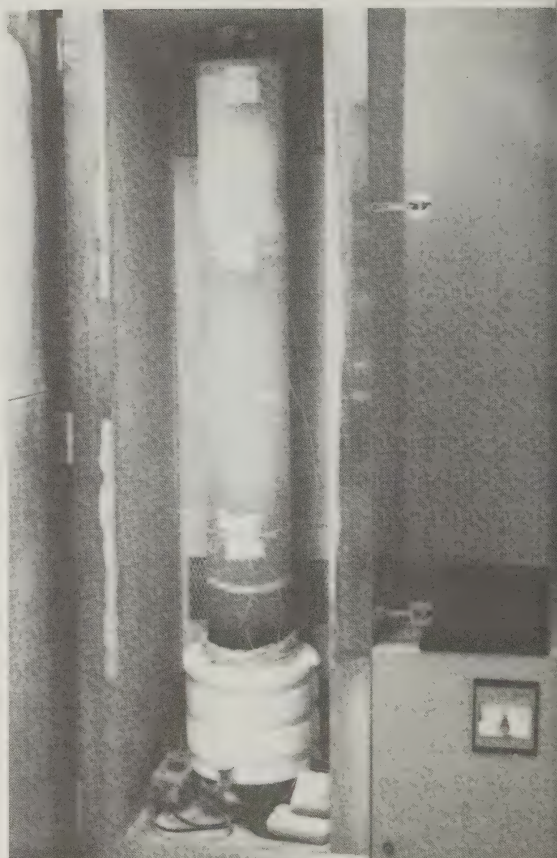
Aklavik: Complete the remaining airport development work and install a safety fence.

Burwash: Complete taxiway and apron lighting.

Cambridge Bay: Replace several roofs, including the ATB, maintenance garage, NDB and some dwellings, and continue improvements to the gravel runway.

Coppermine: Install a safety fence.

Fort Liard: Install the NDB and build a passenger/cargo shelter.



Ice thickness sensor under test in laboratory using a column of saline ice to simulate various sea ice thicknesses.

Fort Norman: Continue runway, taxiway, apron and related work; install visual aids, NDB, meteorological facilities and a safety fence; upgrade the access road and build a passenger/cargo shelter.

Hay River: Overlay runway 12-30 and install runway blast pads.

Inuvik: Continue work on the ATB water supply and install a refuelling system.

Mayo: Upgrade the runway, taxiway and apron; install a VASIS windsocks and a rotating beacon.

Old Crow: Install a safety fence.

Ross River: Begin runway, taxiway, apron and related work; finish the power installation and a passenger/cargo shelter; install the NDB, meteorological facilities and a safety fence.

Sachs Harbour: Provide visual aids and install fuel dispensing equipment. ■

Responsibilities

Veterans Services of the Department of Veterans Affairs provides health care, financial assistance and counselling to eligible veterans and their dependants. In addition, benefits are provided for certain civilians who served in close support of the armed forces during wartime. The program has no district offices in Yukon or Northwest Territories because of the small number of actual and potential clients. Counsellors visit Yukon from the Prince George District Office and the Northwest Territories from the Edmonton District.

The Veterans Land Administration implements the sections of the Veterans Land Act aimed at providing assistance to veterans, their heirs, devisees or personal representatives to acquire title to properties on which they presently hold an agreement for sale.

As of the end of February, 1981, there were 16 accounts in the Northwest Territories and Yukon. Of these, nine have an outstanding balance to be repaid of \$96 956. Out of the remaining seven accounts, six involve Dominion land and are close to earning grants for a total amount of \$13 920.

The Canadian Pension Commission ensures that benefits available under the Veterans Pension Legislation are extended to all eligible veterans and their dependants. Services include counselling, assistance with applications for benefits available under the pension legislation, and medical examinations for assessment purposes. The Vancouver and Edmonton District Offices provide Yukon and the Northwest Territories with services identical to those available elsewhere in Canada.

Pension applicants in Yukon and the District of Mackenzie, Northwest Territories, obtain free legal assistance from the Bureau of Pensions Advocates through the District Office in Edmonton. Veterans in other parts of the Northwest Territories are served through the Winnipeg District Office. Applicants in Yukon or Northwest Territories may, however, deal with any district office.

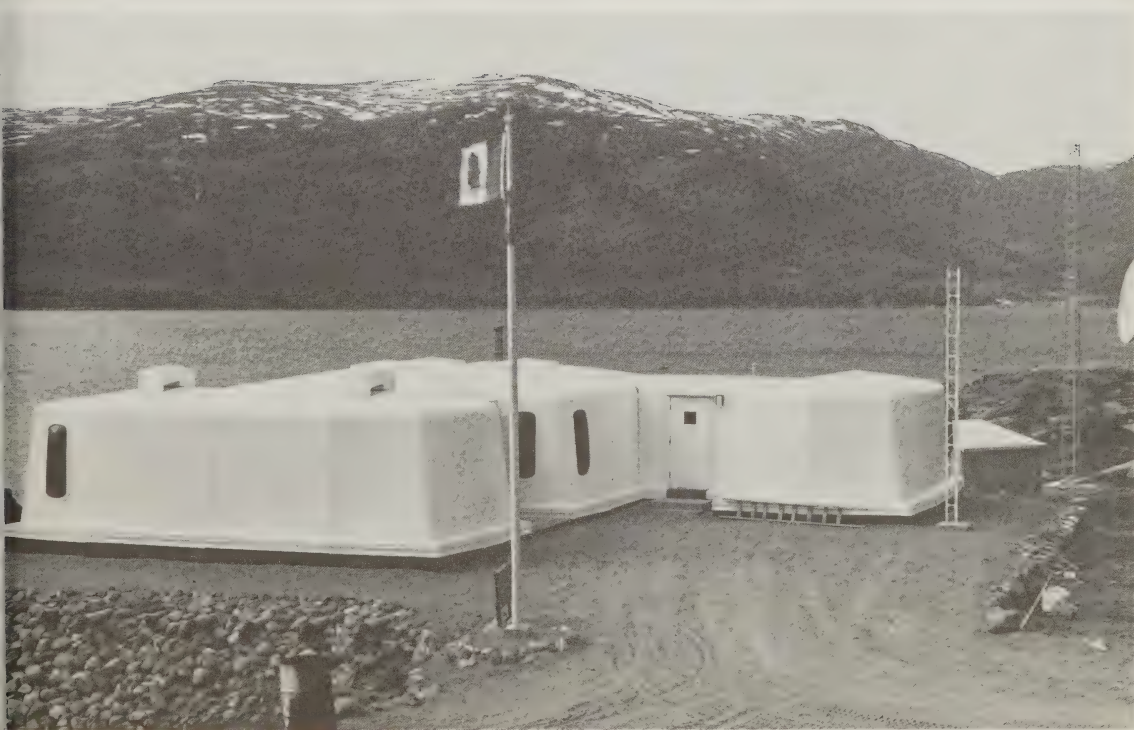
If an appeal is heard by an Entitlement Board, the Canadian Pension Commission will provide travel expenses of the applicant and his witnesses to the place of hearing.

Review 1980-81

At March 31, 1981, pensions awarded for disability or death attributable to service were being paid to 41 recipients in the Northwest Territories and 77 in Yukon. There were eight recipients of War Veterans Allowances or Civilian War Allowances in the Northwest Territories and 46 in Yukon. ■

Government of the Northwest Territories

GNWT



arks Office, Pangnirtung.

Responsibilities

The Northwest Territories Government exercises jurisdiction within the Northwest Territories, exclusive of control over natural resources (except game which is a territorial resource).

Legislative Assembly of the NWT

The Ninth Legislative Assembly of the Northwest Territories, elected in October, 1979, completed an active first full year of operation during 1980. It held sessions in Baker Lake, Frobisher Bay and Yellowknife. All standing and special committees were productive.

Ipeelee Kilabuk was elected in a by-election in the Baffin Central constituency September 15, 1980, to replace James Arreak who resigned on April 1, 1980. The member took his seat when the assembly met in Frobisher Bay in October. Mr. Kilabuk had been a member of the Eighth Assembly.

Second Session of the Ninth Assembly

In his address to the assembly's winter session, which opened January 30, 1980, Commissioner John Parker reflected on the growth and development of the Northwest Territories in the last decade. He mentioned the increase in the number of schools and the expansion of apprenticeship programs. He spoke of the tremendous growth in local government in the past ten years, and the drop in infant mortality rate. The commissioner reflected on the growth of the assembly in the past decade — from seven elected and five appointed members to a fully elected 22-member assembly with a native majority.

Commissioner Parker described three major challenges requiring the leadership of the assembly in the 1980's: political and constitutional development, native land claims, and economic development. He said that greater NWT control required a higher degree of fiscal autonomy through economic development.

The following new financial ordinances were enacted:

- Appropriation Ordinance 1980-81: to provide \$320 600 000 to cover the expenses of the public service of the NWT for the 12 months ending March 31, 1981.
- Supplementary Appropriation Ordinance 1979-80: to provide \$6 134 300 to cover additional expenditures for the public service for the current financial year and to permit deletions from inventory of certain obsolete, surplus or unserviceable articles.
- Financial Agreement Ordinance 1980: to authorize the commissioner to enter into an agreement with the Government of Canada for the payment of operating and capital grants to the Government of the NWT.
- Loan Authorization Ordinance Number 1 1980-81: to authorize the commissioner to borrow funds for loans to municipalities and persons.
- NWT Housing Corporation Loan Ordinance 1980: to authorize the borrowing of funds by the NWT Housing Corporation for the construction or acquisition of public housing projects or both.

Among the amending ordinances enacted were:

- Tobacco Tax Ordinance Amendment: to increase the tax on cigarettes.

- Income Tax Ordinance Amendment: to ensure that the tax base on which income tax is computed is not reduced should new federal legislation providing for federal tax credits for individuals be introduced, and to provide for a schedule containing commencement and transitional provisions and repeals.

- Petroleum Products Tax Ordinance Amendment: to provide for the conversion of the rates set out in the ordinance from imperial to metric units of measure and to increase these rates.

- Territorial Hospital Insurance Services Ordinance Amendment: to treat health facility employees as public servants; and to enable the commissioner to make regulations in respect of boards of management of health facilities.

- Labour Standards Ordinance Amendment: to change the minimum hourly wage.

- Employment Agencies Ordinance Amendment: to allow for the licensing of employment agencies.

The assembly asked that a contract tendering policy be developed which would give preference to residents living in the Northwest Territories and companies incorporated in the Northwest Territories whose principal shareholders are resident in the Northwest Territories. They also requested that bonding requirements be either reduced or options to bonding be provided to enable northern based contractors to successfully tender for projects in the Northwest Territories.

A study was called for of the grants and bursaries program for vocational and higher education with a view to their being provided on the basis of financial need.

A special committee was established to enquire into all aspects of educational problems in the territories. The committee was instructed to present an interim report to the fall session, 1981, and a final report and recommendations early in 1982.

The session was prorogued March 14, 1980.

Third Session of the Ninth Assembly

The spring session opened in Baker Lake, June 11, 1980.

Commissioner Parker welcomed the people of Baker Lake and the Keewatin region to the session. He stressed the importance of having the government and the assembly understood by the people of the North. He said that by meeting away from Yellowknife members were exposed to the views of the people who could gain a better understanding of regional concerns.

The assembly debated a sessional paper on aboriginal rights and constitutional development in the NWT and accepted it with some amendments.

The assembly passed a motion requesting the administration to immediately undertake the necessary negotiations with the federal government to enable the NWT government to administer the Mining Safety Ordinance.

The assembly expressed concern about the Norman Wells pipeline project. A motion was approved asking that the administration, in cooperation with the Dene Nation and the Metis Association, explore with the federal government the possibility of deferring the Norman Wells pipeline project until such conditions are met as aboriginal rights, the formulation of long term non-renewable resources development plan for the NWT, the establishment of a northern-based control agency on the development of non-renewable resources, arrangements for resource revenue sharing and guarantees relating to the future availability of energy supplied to northerners.

The session was adjourned on June 20, 1980, and reconvened at Frobisher Bay, October 22, 1980.

As a first item of business, the Legislative Assembly elected Donald M. Stewart, the member for Hay River, to the office of Speaker. He replaced Robert H. MacQuarrie.

The Special Committee on Unity, established early in the life of the 9th Assembly "to determine the means by which political consensus would be generated amongst the people of the North", presented its final report and recommendations, October 22, 1980.

Consideration of this significant report occupied a major part of the session and included appearances by witnesses representing Inuit Tapirisat of Canada, the Dene Nation, the NWT Metis Association and the NWT Association of Municipalities, and individuals Peter Ittinuar MP and Dave Nickerson, MP.

The assembly gave commitment in principle to the division of the existing NWT into an Eastern and a Western Territory and recommended a plebiscite on such division. A constitutional development committee was recommended to investigate future constitutional and political development in the western NWT.

The new bills passed at this session included:

- The Baffin Regional Council Ordinance: which provides for the incorporation as a legal entity of the Baffin Regional Council and sets out its composition, procedures, powers and methods of operation.
- The Ophthalmic Medical Assistants Ordinance: which provides for the registration of three levels of ophthalmic medical assistants, defines their qualifications and provides for disciplinary measures.
- The Legal Questions Ordinance: which provides a means for obtaining legal opinions from the Supreme Court of the Northwest Territories. It will have the force of judgements, with an exception regarding the income tax collection agreement.

The Legislative Assembly recommended to the commissioner that the two existing vacancies on the Executive Committee be filled by Dennis Patterson (Frobisher Bay), and Kane Tologanak (Central Arctic).

The assembly recommended that the Executive Committee enter into negotiations with the federal government to establish a Territorial Power Corporation to replace the existing Northern Canada Power Corporation.

Members were appointed to form special committees on constitutional development and to oversee a study of the impact of division as recommended by the report of the Special Committee on Unity. A three member delegation was selected to deliver the recommendations of the unity committee, as adopted, to the Prime Minister.

Standing and Special Committees

Prior to each session, bills to be introduced by the administration are reviewed by the Standing Committee on Legislation.

The Standing Committee on Finance undertook a comprehensive review of financial forecasts, main and supplementary estimates. The committee has given direction to the Executive Committee on spending priorities, based on input from the Legislative Assembly and individual MLAs. The committee has also undertaken studies on energy and on the impact of non-renewable resources development on selected communities. To carry out these responsibilities, the committee met between and during sessions.

The Standing Committee on Rules and Procedures started a comprehensive review and revision of the procedural rules of the Legislative Assembly. The last such review and revision was carried out in 1967.

In carrying out its mandate, the Special Committee on Unity met with leaders of the Inuit Tapirisat of Canada and its regional associations, with leaders of the Dene Nation, the Metis Association of the Northwest Territories, and the Committee for Original Peoples' Entitlement. It also met with the Minister for Aboriginal Rights and Constitutional Development, James Wah-Shee, and informally with the Prime Minister's Special Representative for Constitutional Development, C.M. Drury. It received a small number of submissions, verbal and written, from other parties, including members of the Assembly.

The Unity Committee held a number of meetings in Yellowknife, and also met in Baker Lake, Cambridge Bay, Eskimo Point, Frobisher Bay and Inuvik.

A special committee, set up to enquire into all aspects of educational problems in the territories, presented a report and recommendations at the fall session, 1980, concerning the provision of grants and bursaries for higher education.

Clerk of the Legislative Assembly

The office of the Clerk of the Legislative Assembly has two principal functions: it provides professional advice on parliamentary procedure to the Speaker, committee chairmen and individual MLAs, and it provides administrative and support services to the Legislative Assembly during sessions, and throughout the year to standing and special committees and individual MLAs.

To assist in meeting anticipated increased demands for service, two new positions were created during the year. A sessional contract position of law clerk was filled by the appointment in October of Earl D. Johnson, a Yellowknife lawyer engaged in private practice in the city. A research officer was established to assist individual MLAs (who are not members of the Executive Committee) by undertaking research assignments.

The Executive Committee

The Executive Committee is the senior decision-making body of the Government of the Northwest Territories. It consists of the commissioner as chairman, the deputy commissioner, and seven elected ministers.

Executive members are collectively responsible for decisions on policy and programs, for relations with the federal government, and for the general conduct of government. Each member is individually responsible for the policy and programs within assigned departments and agencies. During 1980, all departments which provided programs to the public were assigned to one or another of the elected ministers. Internal service departments continued to report to the commissioner and deputy commissioner.

The organization supporting the Executive Committee was restructured to provide for the needs arising from the increased role of elected members. The new structure includes a series of sub-special and advisory committees leaving the Executive Committee itself free to carry out its proper role of decision making.

There are three sub-committees composed of executive members. The Sub-committee on Priorities and Planning includes all the elected members. The Honourable George Braden is chairman. It considers and makes recommendations on major policy issues, program changes, and overall government priorities. The Financial Management Board is responsible for overall financial planning and direction on financial management to departments and agencies. The Sub-Committee on Legislation and House Planning considers proposed new legislation or amendments as well as other government business before the Legislative Assembly.

The Legislative Assembly agreed in June that the Honourable George Braden, one of the ministers, should serve as Leader of the Elected Executive. His role is to develop consensus positions with the other elected members and to serve as their spokesman on matters which do not fall within individual portfolios.

During the year the Executive Committee considered a wide range of issues. Principles were established for policies on energy conservation and supply and agriculture. Arrangements were adopted whereby band and community councils in Dene communities could be combined. A new mandate for regional operations was adopted and a decision was made to establish a new Central Arctic Region based in Cambridge Bay. A new policy was established on the devolution of government programs to communities. A program was developed to provide a measure of tax relief to homeowners.

Close liaison and communication was maintained with the various native associations and an understanding was reached on a number of subjects. For example, in discussions with the Dene Nation and the Metis Association, five major areas of mutual concern were identified in regard to the proposed Norman Wells oil and pipeline development.

The Commissioner's Office

Commissioner Parker continued to be the formal head of government in the Northwest Territories, and to chair the Executive Committee and the Financial Management Board. Throughout 1980 he also had line responsibility for the Department of Finance and the Department of Information.

Increased emphasis was given to community visits during 1980.

During the year the Commissioner's Award was presented to Stuart Hodgson, the former commissioner. The award is in recognition of service to the Northwest Territories during 12 years as head of the government.

Deputy Commissioner Robert Pilot was responsible for the Departments of Personnel, Public Works, and Government Services, and for Regional Operations. He chaired the Audit Committee, the Capital Planning Committee, and the Board of Directors of the Northwest Territories Housing Corporation. He acts for the commissioner in his absence and thus serves as deputy chairman of the Executive Committee.

The Ministers

The Honourable George Braden is Leader of the Elected Executive, and during 1980 was Minister of Economic Development and Tourism and Minister responsible for Intergovernmental Affairs. He chaired the Executive Sub-Committee on Priorities and Planning and directed the work of the Executive Committee Secretariat.

The Honourable Tom Butters carried two portfolios in 1980, Minister of Education and Minister of Justice and Public Services. He also served as deputy-chairman of the Financial Management Board. The Justice and Public Services portfolio involved ministerial responsibility for a number of semi-autonomous or quasi-judicial boards, including the Legal Services Board, the Workers' Compensation Board, the Labour Standards Board, the Liquor Licensing Board, the Public Utilities Board, and the Highway Transport Board. As deputy-chairman of the Financial Management Board, Mr. Butters is the elected member of the Executive Committee with special responsibility for financial matters.

The Honourable Arnold McCallum was Minister of Health and of Social Services. He was also spokesman in the Legislative Assembly for the Northwest Territories Housing Corporation. Major developments in the health area under Mr. McCallum's direction in 1980 included the establishment of a pharmacare program and of a program to train ophthalmic medical assistants. In the social services and housing areas, a senior citizen's home was established in Fort Providence and a new South Mackenzie Correctional Centre was built in Hay River. In Frobisher Bay the administration of social services was turned over to the local community.

The Honourable Richard Nerysoo was Minister of Renewable Resources and Minister responsible for Energy. In addition he chaired the Executive Sub-Committee on Legislation and House Planning. Mr. Nerysoo's activities during the year emphasized wildlife issues as well as liaison with the native associations. He met with hunters' and trappers' associations in a number of communities. He attended the Dene National Assembly in Fort Good Hope and the Annual General Meeting of Inuit Tapirisat of Canada in Coppermine. He also met with Inuit Tapirisat on other occasions and with the Baffin Regional Council.

The Honourable James Wah-Shee was Minister of Local Government and also Minister responsible for Aboriginal Rights and Constitutional Development. He directed the work of the Aboriginal Rights and Constitutional Development Secretariat. Mr. Wah-Shee attended the First Ministers' Constitutional Conference in Ottawa along with Mr. Braden. He held a number of informal meetings with the native associations to establish sound working relationships with them.

Mr. Wah-Shee encouraged and supported regional councils and was responsible for the negotiations which made it possible for band councils and local community councils to be brought together in Dene communities.

In January, 1981, Commissioner Parker named Dennis Patterson to the Executive Committee as Minister of Education and Kane Tologanak was named to the Executive Committee as Minister of Government Services. This resulted in some shifting of portfolios as follows:

- George Braden, Leader of the Elected Executive, Minister of Justice and Public Services;
- Thomas Butters, Minister of Economic Development and Tourism and Minister of Finance;
- Arnold McCallum, Minister of Social Services and Minister of Health;
- James Wah-Shee, Minister of Local Government and Aboriginal Rights and Constitutional Development;
- Richard Nerysoo, Minister of Renewable Resources and Energy;
- Dennis Patterson, Minister of Education;
- Kane Tologanak, Minister of Government Services.

The Secretariats

As a result of the re-structuring the Executive Committee is now supported by four staff groups: the Executive Committee Secretariat, the Financial Management Secretariat, the Aboriginal Rights and Constitutional Development Secretariat, and the Regional Operations Secretariat.

The Executive Committee Secretariat includes a policy group which reviews policy proposals and assists the Executive Committee with establishment of priorities and allocation of resources. It also provides secretarial service to the Sub-Committee on Priorities and Planning. The Bureau of Statistics provides a factual data base for decision-making both to the executive and to government departments. It issues a variety of publications including a Statistics Quarterly. The Intergovernmental Affairs unit coordinates, assists, and advises on relationships with other governments. It has offices in Yellowknife, Ottawa, and Edmonton. The legislative assistant coordinates the Executive Committee's input to the Legislative Assembly and serves as secretary to the Sub-Committee on Legislation and House Planning.

The Aboriginal Rights and Constitutional Development Secretariat has an executive director and employs negotiators for each of the active aboriginal claims. Its tasks include developing contact with the various native associations, advising the minister and other executive members on aboriginal rights, and representing the interests of the Government of the Northwest Territories on aboriginal claims. In addition, it carries out research and analytical tasks on particular aspects of aboriginal rights and constitutional development.

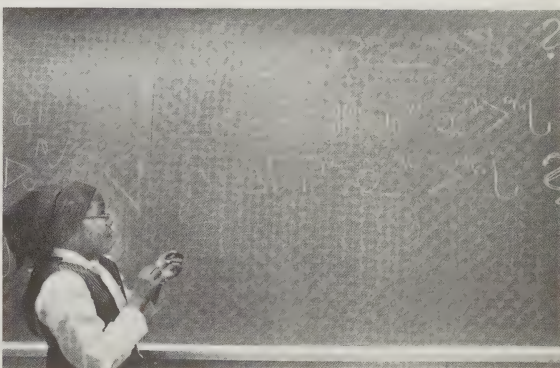
The Regional Operations Secretariat has a coordinating role, advises the executive member responsible for regional operations, and facilitates devolution of authority to the regional and local levels. It includes capital planning and regional planning unit.

Programs of the Government of the Northwest Territories are developed by the headquarters departments. They are, however, provided to the public on a decentralized basis under the authority of the regional directors.

Department of Education

In 1980 the Department of Education was restructured to reflect a "direction for the 1980's" departmental paper, the growth of ministerial government, the recommendations of the commissioner's task force on administration and the continued commitment towards decentralization.

The department is now headed by a deputy minister and two assistant deputy ministers.



Igloodik, learning syllabics.

Programs and Evaluation

An amalgamation of the former programs and linguistic divisions produced a new concentration on teaching of native languages in schools and English as a second language. Work also started on the preparation of more clearly defined policies for the implementation of bilingual education. Sets of readers, pupil workbooks and a variety of other learning aids in Inuktitut and Dene languages have been produced.

The three year task of providing core programming in English, mathematics, science and social studies for all grades up to nine has been completed.

The ability to evaluate pupil progress in mathematics strengthened with the publication of a series of criterion-referenced tests for the use of teachers of kindergarten to grade six. There was a major review of the complete kindergarten to grade nine mathematics program. As a result, a revised goals and objectives was produced, which give greater clarity and improved direction to schools.

Research was completed into the development of vocational education programs for the Inuvik region at the senior high school level. The community grade ten program was strengthened and expanded to more schools and a northern social studies course was established as a compulsory component of the program.

Policies and planning were completed in the area of special and remedial education. Work was begun on the development of appropriate student testing and diagnostic materials.

A major training program for housing maintenance servicemen was completed and courses in the six areas of training were conducted in various locations.

Course outlines were completed at the basic and intermediate levels for adult basic education in language, math, science and social studies. The adult life skills training program was completed and distributed.

The children's magazine, PIK, was evaluated, showing strong positive comment on its value as a learning aid. Six issues a year are distributed to all schools and limited copies are made available for public subscription through the Department of Information.

Support and strengthening of metric in education programs was maintained while keeping pace with change throughout Canada.

Support Services

School enrolment in 1980 was 12 484, compared to 12 464 in 1979.

The students grants and bursaries board approved 335 grants and awarded 15 bursaries. After having completed an acceptable level of high school education, students who wish to continue their studies at a vocational school, an institute of technology, a community college or a university can take advantage of the support.

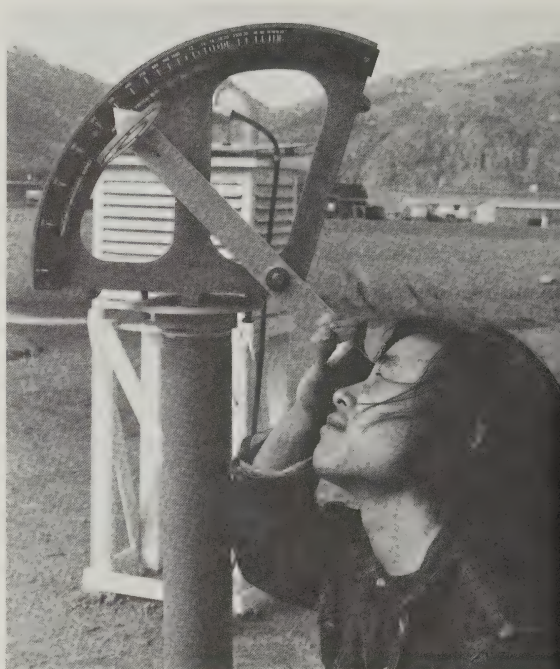
New schools built in the communities of Coral Harbour and Fort Norman were completed and opened at the beginning of the 1980-81 school year.

In February, 1980, the Matonnabee School in Pine Point was heavily damaged by fire. Instant emergency planning produced the enlarging of Galena Heights Elementary School and the replacement of the Matonnabee School. This will become the community's junior/senior high school. The school is slated to be completed in the late spring, 1981.

Satisfactory progress is being made on replacement schools for Maani Uluak School in Rankin Inlet and William McDonald Junior High School in Yellowknife.

Planning began on new schools for Norman Wells, Lac La Martre, an addition for the school in Clyde River and the development of the mezzanine floor in the Gjoa Haven School.

The policy of decentralization of services to the communities and the resulting emphasis on local involvement in the delivery of education programs was continued during the year.



Jack Maniapik checking cloud heights, Pangnirtung. He is a graduate of the Fort Smith Vocational School.

Adult Vocational Training Centre

During 1980, extension courses, were provided in Fort Smith. These included: heavy duty mechanics, business education, food services, driver training, professional truck operator, electronics and telecommunications, general educational development (high school equivalency), heavy duty equipment operation, electrical, housing maintenance, mechanics, welding, marine training, oil burner mechanic, arctic airport communicator, community service worker and community worker. Two special heavy duty mechanics courses were provided in Fort Smith for students whose primary language is Inuktitut. Using Inuit interpreters, 12 students who had worked as heavy duty mechanics for periods ranging from 4-20 years were given the opportunity for skills upgrading in their apprenticeship.

Isolated community wiremen in more than 30 communities can upgrade electrical skills as a result of the addition of a new first and second year electrical instruction course.

To meet the demand for trained nursing assistants, the existing program in Yellowknife has been complemented by a similar program in Inuvik. The two courses have 22 students enrolled.

A millwright/machinist pre-employment course was initiated in Yellowknife, using the facilities of Sir John Franklin High School. Eleven students enrolled and all graduates were guaranteed employment by northern industries.

The Department of Education employed permanent staff for the renewable resources program. Selkirk College will continue to have a working relationship with the Department of Education. Eleven students graduated in 1980 and received a joint Selkirk College/Government of the N.W.T. diploma.

Bilingual, northern native teacher training needs are being met by programs in Fort Smith and Frobisher Bay. Western arctic language speaking students attend at Fort Smith and eastern arctic Inuktitut speaking students attend at Frobisher Bay. The Frobisher Bay teacher training program is supported by an Inuktitut language directorship.

Department of Local Government

During 1980 the department consulted with communities on development of a new community government ordinance. The new legislation will provide communities with a choice of responsibilities and the way in which they manage community government affairs. People can discuss opportunities for greater self-government and choose the kind of community government which suits their particular need.

Councils were helped develop greater skill in managing community affairs. This was through training programs and on-going support to communities carrying out local government responsibilities.

The development of communities toward more responsible government continued. Chesterfield Inlet became a hamlet, April 1, 1980. During the year three other communities entered into consultation to prepare themselves for hamlet status in 1981.

Municipal Affairs

Frobisher Bay attained town status in 1980. It became a hamlet in 1969, a village in 1974 and now has sufficient population and assessment value to meet the criteria to become a town.

The restructuring of grants to tax-based municipalities was reviewed. A new formula was devised as the result of the deliberations of a study group of municipal administrative representatives and officials of the Department of Local Government.

A thorough review of municipal legislation was undertaken, particularly in the area of election procedures and the terms of office of mayors and councillors. Some 86 amendments are being developed and will be proposed to the legislative Assembly in 1981.

Regular appraisal and inspection services continued as well as support in administrative, procedural and fiscal matters. Grants and debenture loans were provided to finance various municipal capital projects and acquire equipment. The local councils developed economic budget controls to offset, where possible, the rising costs of providing services to ratepayers.

Town Planning, Lands and Water and Sanitation

The Lands Section acquired land in many communities to support government programs and to consolidate existing developments. The Land Management Program included the initiation of granular material inventories in Pangnirtung, Pond Inlet and Broughton Island. A quarry development and restoration plan was prepared in Norman Wells.

Townsite expansion plans were prepared or initiated in the communities of Cape Dorset, Pond Inlet, Sanikiluaq, Pangnirtung, Grise Fiord, Paulatuk, Arctic Red River, Sachs Harbour, Aklavik, Holman Island, Fort Good Hope, Fort McPherson, Snowdrift, Nahanni Butte, Fort Resolution, Kakisa, Rae Lakes, Lot 500 (Yellowknife)/Detah, Baker Lake and Rankin Inlet.

Major legal surveys were carried out in Baker Lake, Holman Island, Frobisher Bay and Rae. Minor surveys took place in Cape Dorset and Fort Liard. Control surveys in conjunction with the aerial photography and mapping program were undertaken in Spence Bay, Rankin Inlet, Baker Lake, Lake Harbour, Pangnirtung, Pond Inlet, and Tuktoyaktuk. New aerial photography is available for most Baffin and Keewatin region communities.

The Land Assembly Program projects are underway or completed in Tuktoyaktuk, Cambridge Bay, Eskimo Point, Cape Dorset, Lake Harbour, Igloodik, Baker Lake, Coppermine, Frobisher Bay and Rae.

The Water and Sanitation Program provided some \$8 000 000 worth of capital improvements to water, sewage and garbage facilities in NWT. Major water supply projects were completed in Inuvik, Fort Good Hope, Coppermine, Pond Inlet, Broughton Island and Igloodik. Water/sewer servicing projects were carried out in Frobisher Bay, Rankin Inlet and Rae-Edzo. One major sewage disposal project was implemented at Fort Smith.



Water delivery, Pelly Bay.

Development and Training

Extensive preparatory work was done in Gjoa Haven, Coppermine and Norman Wells so that they may attain hamlet status by early 1981.

Administrative staff training activities have continued at the community level to provide skills in management and decision-making. A nationally certified program in municipal administration was presented to 40 people on a territory-wide basis. It will become an ongoing program. The program will lead to a certificate in municipal administration from McMaster University.

Airports

The Airports Program included airport construction, a territorial-federal agreement that runway lengths shall be based on operational needs, and the transfer of the airport staff training program to the territorial government. Progress was also made toward greater territorial government involvement in airport capital and facilities planning. An ongoing airport review program is being carried out to ensure that arctic community airports are operated to both user satisfaction and prescribed standards of aviation safety.

To date nearly \$36 000 000 has been spent on a joint territorial/federal program to improve airports and aviation support services at 38 communities in the NWT. With the completion of the program, most NWT communities with populations of more than 100 will have improved runways, air terminal buildings, navigational aids, airfield lighting, weather and communication equipment.

Hamlet and settlement councils are employing trained local people to operate and maintain the airports and provide weather and communication services. In 1980-81, approximately \$3 000 000 was spent on operation and maintenance of community airports in the NWT.

Effective April 1, 1981, the territorial government will assume total responsibility for airport staff training. These responsibilities were previously shared by the federal and NWT governments. New instructors revised the training programs, adopting methods and training aids to meet the requirements of the arctic airports program.

A total of 67 northerners completed airport training to provide aviation weather, air-ground communication and airfield maintenance services. In 1980, 14 candidates selected by the local councils were trained at two observer-communicator courses in Fort Smith.

Federal-territorial discussions resolved the runway length issue. The length of runways will now be based on site operational requirements. A review of the federal-territorial air facilities policy produced a territorial request for transfer of selected federal responsibilities.

Recreation

A program of regional recreation training workshops gave community leaders an opportunity to develop skills in organizing and implementing community recreation programs and services. A regional recreation position was established for the Baffin region. Decentralization of the division's programs and services accompany this greater regional role.

The sixth Arctic Winter Games at Whitehorse, Yukon Territory, involved over 1 500 NWT athletes. Regional and territorial trials in 15 sports lead to the final selection of a 300-member team which represented the NWT in the games.

Preparations are well under way for the Jeux Canada 1981 Summer Games in Thunder Bay, Ontario. Athletes competing in softball, basketball, swimming and track and field have established training programs to prepare themselves for the Thunder Bay competition. The NWT is expected to be represented by a team of 60 athletes.

Sport North, the federation of territorial sport associations, reorganized with a new constitution and board of directors. It added two new members. An ongoing review of sports funding produced an assistance program which will aid individual NWT sport associations to achieve improved opportunities and leadership. Funding was provided for a selected number of cultural and artistic activities, including the eleventh annual northern games held in Holman Island. The division supported the NWT Council for Disabled Persons' promotion of recreation opportunities for the disabled.

Department of Economic Development and Tourism

Programs administered by the Department of Economic Development and Tourism provide institutional, financial, technical and economic support for growth of the NWT economy. Economic development policies reflect both social and economic factors and are structured to yield maximum benefits to NWT residents.

During 1980, the department efforts were toward maximum employment opportunities in both the non-renewable and renewable resource sectors; long term economic development strategies to promote balanced industrial growth; technical and financial assistance to existing and new businesses. Departmental resources were directed to umbrella organizations that represent major sectors of the economy.

The department assessed the performance of provincial development corporations and determined the feasibility of establishing an NWT development corporation. If the results of the study are positive a proposal will be placed before the Legislative Assembly.

Commerce

The Commerce Division supports and stimulates existing commercial activity and promotes new business ventures. During 1980, its major emphasis was toward improving its financial assistance, technical advice and business counselling.

A business consulting function assisted new and existing businesses with business management, financial matters, technical support, marketing advice and training programs.

The Territorial Business Profile Information System (TBPIS) was developed to store a wide variety of information on approximately 1 700 Northwest Territories businesses.

The Art and Craft Sector assisted sculptors who make up the major portion of artists in the NWT. A close working relationship was maintained with the Department of Indian Affairs and Northern Development and the Canadian Arctic Co-operative Federation to develop a long term program for the supply of carving stone. Consultant assistance was provided to a carving co-operative as pilot project.

A public art gallery in the south was assisted with the development of a popular Inuit art education program. Two NWT craftsmen were given assistance to attend the World Craft Council Assembly in Vienna. They have been passing the benefit of their experience on to other craftsmen.

Cooperatives continued to contribute to the economy of the Northwest Territories. The 40 cooperatives in operation during the year reported an active membership in excess of 3 900. Permanent employment exceeded 320 with total direct wages and benefits exceeding \$3 200 000. As well, it is estimated that as many as 1 500 residents may benefit indirectly from cooperative enterprise through the sale of arts and crafts, renewable resources, and other related activities. The value of this activity to the territorial economy was estimated to exceed \$3 000 000 in 1980.

During the year, the cooperative system generated sales and other revenues in excess of \$16 341 549 on which a net savings of \$393 873 was achieved. The total value of cooperative assets grew during the period and now exceeds \$11 700 000.

The Canadian Arctic Cooperative Federation Limited played a predominant role in the cooperative system. Its sales for the period will approach \$10 500 000. New initiatives in 1980 could result in the amalgamation of Canadian Arctic Producers and the federation.

A renewable resources development service was introduced to provide technical assistance to public and private sectors planning, implementing or expanding renewable resource based enterprises. Assistance includes preparing and/or evaluating proposals and feasibility studies, providing day to day technical assistance and preparing sector development plans.

During 1980 efforts were increased to have the management of the department's commercial enterprises placed in the private sector. Following the direction of the Legislative Assembly, groups and individuals are being identified who want to become involved in the operation of the enterprises. The retail craft shop in Rankin Inlet has been turned over to private enterprise and negotiations are being carried on in other communities for similar arrangements.

The 24 commercial enterprises operated by the department employed 128 people on a full-time basis and 517 part-time.

Six meetings of the board of the NWT Eskimo Loan Fund were held in Yellowknife during 1980-81. Loans totalling \$346 425 and contributions valued at \$46 110 were approved.

The board of the Small Business Loan and Guarantee Fund held six meetings. The board issued loans for a total value of \$942 029 and guarantees totalling \$181 400.

The Canada/Northwest Territories Special Rural Development Agreement (Special ARDA), signed June 16, 1977, was continued. Implementation is the responsibility of the Government of the NWT through wildlife services of the Department of Renewable Resources and the Department of Economic Development and Tourism. An advisory committee of representatives for the federal and territorial governments and of the four native associations meet monthly to review project proposals.

During the year, 115 applications for financing were received, yielding 83 offers and 64 acceptances. The acceptances resulted in \$1 914 000 in financial commitments, of which \$618 000 were for Inuit projects, \$1 116 000 for Indian or Metis projects and \$180 000 for other projects.

Tourism

The number of visitors to the NWT during 1980 increased 15 to 20 percent from 1979 as about 35 000 tourists travelled to the NWT. A significant increase in vehicular traffic occurred. Of particular interest to motorists travelling the Mackenzie Highway was the completion of the Alberta government's paving program to the NWT border.

New lodges are operating at Blachford Lake, near Yellowknife, Hall Lake, near Hall Beach, Thuban Lake, near Fort Smith and Dubawnt West Camp in the Keewatin. New outfitting businesses include the Cambridge Bay Co-op (fly-in fishing), Baker Lake Boat Outfitters and Coates Island Outfitting (Coral Harbour longliner trips).

White Fox Inn at Sachs Harbour re-opened under new management. Spence Bay Co-op Hotel opened with accommodation for 13 persons and Grise Fiord Co-op Hotel opened with accommodation for 14. A tourist home, the first such facility in the NWT, was opened in Resolute Bay.

A major study of the tourism industry was completed. A number of recommendations in the study are being reviewed by the minister. Some of the recommendations included the setting up of tourist zones. The study will provide positive direction over the next 10 years to businessmen, community councils, travel industry associations and the Government of the NWT.

The territorial parks system has undertaken a new approach. A parks system planner is now on staff to develop new parks policies and strategies. The parks program will include specific categories such as destination parks, recreation parks, and historical parks.

Two major parks are now under construction along the Dempster Highway. They will be opened in 1981. As well, an information booth has been set up at Fort McPherson.

Manpower Development

The Manpower Development Division provides a focal point for northern residents, business and industry on employment, training, apprenticeships and related support programs. The division encourages northern business and industry to hire and train northerners. In addition, residents are counseled to take advantage of training and employment opportunities.

The short term employment program (STEP) continued to provide approximately 4 000 man-weeks of employment to communities with high seasonal unemployment.

The mining industry dominated the resource development sector in the NWT and offered the greatest opportunity for northerners to become involved in the wage economy. Over the past year, the division encouraged companies to use northern manpower.

The petroleum industry worked with the division to seek and examine means to attract and retain northerners as employees. In-house training programs are available and used in a wide variety of jobs. Accelerated training for employees showing commitment and potential have been developed and designed specifically for the North.

The apprenticeship program continued to develop skilled tradesmen for northern industry through a combination of on-the-job and in-school training. This program is supplemented by short government-sponsored technical courses available either at southern technical schools, the Adult Vocational Training Centre (AVTC) in Fort Smith, and, in the case of the housing maintenance serviceman trade, in some of the smaller communities in the North.

There are 557 trainees in the designated trades across the Northwest Territories. Of these approximately 100 were employed by the territorial government. During the school year, 409 apprentices attended technical training classes and 350, or 85 per cent, were successful.

Sixty-seven apprentices completed their training and obtained certification as journeymen and 44 received inter-

provincial status. Under the Tradesmen's Qualification Program, 54 tradesmen achieved journeyman certification by examination and 21 received interprovincial status.

Planning and Resource Development

Proposals valued at more than \$2 000 000 have received funding under the first subsidiary general development agreement. These are primarily for tourism development, timber inventories, fish and wildlife resources and community planning and development.

The division has been involved in the work of the Resource Development Committee, assessing the implications of the Polaris Mine, Esso Resources (Norman Wells) pipeline proposals, Lupin Mine, Cadillac Mine and Cullaton Lake Mine. The division also monitors ongoing exploration activities and economic impact of the non-renewable resource industries.

In the immediate future, greater emphasis will be placed on economic development planning, particularly non-renewable and renewable resources projects. This will include detailed analysis of individual projects and the formulation of socio-economic action plans with resource companies, formation and development of policies on economic development and tourism programs, and negotiations with the federal government leading to subsidiary agreements under the General Development Agreement.

During 1980, training-construction activities were carried out under the Hire North Program along selected sections of the Liard Highway. The program provides training for northerners in trades or occupations associated with highway construction and maintenance, employment for local residents, opportunities for construction related business, and carries out assigned construction projects. The Hire North Committee allows native people to participate in the management of the Hire North project. The committee, composed of six native community representatives, one of whom is chairperson, and four federal-territorial government representatives, met on a regular basis to accept reports, review work plans, budgets, and progress of training programs and construction work.

The training-construction camp is located approximately two kilometers from Fort Liard on the Fort Liard access road to the Liard Highway.

Work completed during 1980 included clearing approximately 80 ha of the right-of-way and five borrow pits between km 223 and km 238, grade construction from the Muskeg River south to km 230; and trimming and gravelling of 22 km of road surface from km 207.8 south to km 225 including 5 km of the Fort Liard access road.

Right-of-way clearing was carried out during late January to March from two camps located near the Netla River and the Blackstone River. Approximately 110 ha was cleared in three sections between km 113 and km 207. This work provided employment for approximately 55 individuals, although 135 were recorded as either part-time or full time employees during the three-month operating period.



Loading celtic, Nanisivik Mine.

Department of Renewable Resources

Wildlife Service

The Wildlife Service continued to provide funding under a variety of programs, including fur incentive subsidies, trappers assistance contributions, outpost camp contributions, and grants to hunters' and trappers' association. Consultation with resource users continued throughout the year at regional conferences of hunters' and trappers' associations held in Tuktoyaktuk, Fort Norman, Cambridge Bay, Rankin Inlet and Frobisher Bay. Productive meetings were also held throughout the Northwest Territories to identify ways for native northerners to have greater involvement in wildlife service programs. Other developments included the formation of the Baffin Regional Hunters' and Trappers' Association, the Keewatin Wildlife Federation, and the inauguration of harvest statistics collection by the Baffin Regional Inuit Association.

Four members of the first graduating class of the renewable resources training program at Fort Smith obtained permanent positions with the wildlife service. New on-the-job training was initiated to encourage further employment of native residents with the wildlife service.

Caribou studies remained a major research activity of the Wildlife Service. Survey results indicated population declines in the Bathurst, Kaministiquia and Beverly herds. The Wildlife Service continued its involvement with Interjurisdictional Caribou Management Committee, which comprises representatives of federal government agencies, and the governments of Manitoba and Saskatchewan. Caribou work was initiated in north Baffin and continued on Coats Island, Melville Peninsula, and the area between Melville Peninsula and Chesterfield Inlet. There introduced herd on Southampton Island continued to increase.

The third and final year of a polar bear mark-and-recapture study in Lancaster Sound, as part of the Eastern Arctic Marine Environmental Study Program, was concluded. A three-year polar bear deterrent study to reduce man-bear conflicts was initiated at Churchill in cooperation with the Government of Manitoba.

Muskoxen surveys were done in the central and western Arctic. They revealed that populations there are more numerous than was previously believed.

Environmental Services

The Environmental Services Division, created to bring all the management of natural resources into a single department, administers the environmental protection ordinance, the pesticides ordinance, some aspects of the public health ordinance, the petroleum products storage ordinance and some aspects of the Clean Air Act of Canada.

In addition, it responds to spills of oil or other damaging materials and establishes and maintains a territorial-wide reporting system. It initiates and maintains contingency plans for oil spill cleanup and other environmental emergencies and works closely with the Department of Indian Affairs and Northern Development and Environment Canada in setting, monitoring and administering environmental conditions for offshore drilling and ocean dredging.

The division administers the scientists ordinance which licenses scientific activity, including research, in the North. It acts as the territorial agent, along with the Government of Canada and the provinces, in designing and enforcing standards and regulations in hazardous waste identification, disposal or storage, and in the transportation of dangerous materials.

Science Advisory Board

The Northwest Territories Science Advisory Board provides advice and support to the Legislative Assembly on matters of science, engineering and technology. The 10 members represent both northern and southern Canadians. Three regular meetings were held in 1980, one each at Yellowknife, Eskimo Point and Wrigley Lake. The board continued the summer student employment program as 10 Northwest Territories high school students participated in field studies.

Recent publications of the board include a paper on diet and nutrition by Dr. Otto Schaefer and statements by the board on the status of renewable resources, energy consumption and uranium exploration in the Northwest Territories. In the coming year the board will continue to review northern energy problems and prepare a submission to the Legislative Assembly's special Committee on Education.

Energy Conservation

The Energy Conservation Division is a new division formed to manage the Canada-Territorial Energy Conservation and Renewable Energy Demonstration Program. The objectives of this agreement are to conserve non-renewable energy; develop renewable energy resources (wood, wind, water and solar); and, through demonstration projects, increase public awareness of the need to conserve energy.

Funding under this program is shared by both governments and totals \$3.3 million over a four year period.

In addition to managing the agreement, the division directs an energy conservation awareness program aimed at the public and government staff.

Department of Social Services

The Department of Social Services continued to increase community involvement in social services. Northerners were recruited and trained for positions at all levels of the organization.

The interim agreement between the Government of the Northwest Territories and the council of Frobisher Bay was successful. A final agreement was signed in October, 1980, which will place all social services programs under Frobisher Bay council by April 1, 1981.

The continued emphasis upon recruiting and training northerners as employees of the department produced an increase in northerners on staff. Many communities are now served by community social service workers who were born and raised in the community or region. Several of these staff members have attended community colleges or universities.

Alcohol and Drug Program

Twelve training sessions and regional conferences were held for staff and committee members of projects funded through the Alcohol and Drug Coordinating Council. In-service training sessions for community social service workers were provided throughout the NWT. The training sessions and conferences gave participants information about alcohol and other drugs, counselling techniques, and preventative models.

The administrative staff of community projects received training in budget management. Several members of community project committees attended workshops on administrative details, committee structure and functions, and knowledge of alcohol and drug education.

The NWT Alcohol and Drug Co-ordinating Council renewed funding for 12 alcohol and drug community projects. Among new projects receiving funding in 1980 were Hall Beach, Igloodik and Tuktoyaktuk.

Corrections Services

There was increased attention during 1980 to establishing alternatives to incarceration. Several correction projects are being planned in the NWT in a further attempt to make alternative programs available to the courts. Probation and community service orders continued to be used. There was an increase in the number of paroles granted by the National Parole Board to NWT inmates.

The population in the correctional institutions increased. Yellowknife Correctional Centre operated at over-desirable occupancy conditions for several months. Construction of South Mackenzie Correctional Centre was completed in November, 1980. This centre replaced a temporary trailer complex that was used for several years.

Public meetings were held in Inuvik, Coppermine, Cambridge Bay, and Frobisher Bay to discuss corrections problems and programs. Community meetings will continue in 1981 as part of an overall program to provide adequate correctional programs and facilities in the Northwest Territories.

Family and Children's Services

The population of children under the care of the superintendent of child welfare changed significantly. In past years the majority of children in care were under the age of six, but during 1980 more than 70 per cent of the children in care were between seven and 18. Action was taken to develop appropriate resources for this older group of children. Maintenance payments to foster parents throughout the Northwest Territories were raised in recognition of the increasing costs of maintaining a child and of the major role which foster parents play.

An Interdepartmental Placement Committee was initiated to coordinate the services provided to children and adults with special needs. A territorial committee was established in Yellowknife and in several regions and during 1981 committees will be established in specific communities. Greater emphasis was given to assessment and treatment services. Wherever possible, these services were provided or purchased in the Northwest Territories.

Financial Assistance Programs

Several initiatives were taken to provide greater service to those in financial need. Social assistance food rates were increased by 10 per cent. A special clothing allowance was introduced providing a greater purchasing capability for long term social assistance recipients. Increased allowances for working individuals were introduced to assist them with the costs of day care services.

The Territorial Senior Citizens Benefit Program provided \$50 per month to senior citizens who are in receipt of the old age security benefit plus the guaranteed income supplement. A change made April 1, 1980, enabled the territorial government to pay senior citizens benefits retroactively.

Services to Aged and Handicapped

The Fort Providence senior citizens home officially opened August 22, 1980. This project was a joint venture of the Fort Providence Housing Association, the NWT Housing Corporation, and the Department of Social Services.

Coordinated home care programs commenced at Hay River and Fort Smith. These hospital-based programs provided outreach services such as home nursing, homemaking, and meals on wheels to elderly and disabled persons.

The Inuvik Council for Disabled Persons assumed responsibility for a life skills project designed to meet the needs of mentally handicapped adults who require assistance to become employed.

A house was purchased in Yellowknife which will become a group living unit to provide short term residential services for psychiatric patients released from hospital treatment. This unit will be funded by the Department of Social Services and operated by a community group.

Tenders were let for the construction of a group living unit for mentally handicapped adults in Yellowknife. This unit — a first for the NWT — will re-integrate mentally handicapped adults with the community and the work force.

Department of Health

In 1980 the Department of Health introduced a new health information system capable of interpreting health information gathered by Health and Welfare Canada and the Department of Health. The department initiated a health services study for the central arctic and participated in a Keewatin health study.

A more effective working relationship with Health and Welfare Canada was developed through participation in the Health Coordinating Committee. The Department of Health provides some services to the federal department in the territories and discussion took place toward furthering this contractual relationship.

The Department of Health, Department of Social Services and Health and Welfare Canada consolidated the pharmacare program and the medical travel program within the Department of Health. Much work was done toward consolidating other areas such as chronic care and nursing homes.

The Department of Health and the Department of Social Services funded new coordinated home care programs in Fort Smith and Hay River. Home care is administered by the Fort Smith Health Centre, H.W. Williams Memorial and Stanton Yellowknife Hospital. It consists of home nursing, homemaker and meals-on-wheels services. In the smaller settlements, public health nurses perform regular home visits.

Health Centres

The Fort Smith Health Centre has 15 acute care and 10 chronic care beds. Incorporated into the centre are inpatient acute care, outpatient and emergency services, a home care program, extended chronic care, public health, social services and doctors offices for visiting specialists.

Stanton Yellowknife Hospital is an accredited 72 acute care hospital, providing a wide range of inpatient and outpatient services and specialist clinics.

Approval was given by the Legislative Assembly to initiate planning for a larger facility. The hospital has undergone major renovations to tide it through the period leading to the larger facility. It has expanded its services and now functions as a regional laboratory for hospitals and nursing stations.

The hospital initiated an ophthalmic medical assistants program, jointly sponsored by the Departments of Education, Personnel and Health, to train northern residents in the treatment of eye and vision problems.

The H.H. Williams Memorial Hospital of the Hay River Health Centre has 32 acute beds and 18 chronic beds. It serves the southern Great Slave Lake area, including Pine Point and as far north as Fort Providence. The centre incorporates chronic care, emergency outpatient services, public and environmental health, social services and a home care program.

Health Information and Awareness

The Department of Health jointly funded a health resource centre/library with Health and Welfare Canada. The resource centre serves all health and allied professionals in the NWT as well as schools, voluntary agencies and the public.

The Department of Health, together with the Rae-Edzo Native Women's Health Committee, established a health awareness project for both communities. The Native Women's Health Committee focused on spring clean-up, breast-feeding awareness and an immunization campaign.

NWT Health Care Plan

The NWT Health Care Plan provides medical care and hospital insurance to eligible NWT residents. Certain specified conditions not insured under the plan are covered by the Department of Health's supplementary health program, subsidized medical travel program and the pharmacare program.

The NWT Hospital Insurance Plan is administered under the direction of the Territorial Hospital Insurance Services (THIS) Board, whose members are appointed by the commissioner. The Department of Health provides support services to the board on matters falling under its jurisdiction. The THIS board met several times during 1980. It dealt with the establishment of inpatient and outpatient rates, the need for a mental health program for NWT residents and the need for additional specialists in the Northwest Territories.

Department of Personnel

The Department of Personnel plans and coordinates personnel management within the public service of the Government of the Northwest Territories.

During 1980 the Office of Native Employment and the in-service training section were integrated into Staff Development and Training Division. This produced a comprehensive review of training policies for the public service and an evaluation of the government's policy on the hiring and retention of native staff.

Personnel Services

A program of restraint in southern Canada hiring of staff was continued and yielded significant savings in advertising costs and a higher ratio of northern to southern recruitment. Northern hires increased by seven per cent from 1979 to 1980. A total of 1 086 appointments were processed, of which 1 013 were from the North and 73 were from the South.

Negotiations for renewal of the collective agreement with the Northwest Territories Teachers' Association were concluded in April, 1980, and a revised one year agreement was signed to expire on August 31, 1981.

Work started on making changes to the sale of staff housing to bring interest rates more into line with those which apply to a standard mortgage on the private market.

A personnel policy manual was completed to inform managers of personnel policies and practices implemented for the territorial public service. An employee dental plan, negotiated in 1979, was implemented.

Responsibility for the administration of the benefits package for teachers was transferred to this section. Administrative systems were established to handle the increased workload brought on by the addition of responsibility for more than 600 teachers. Significant portions of the workload were decentralized to regional headquarters.

Classification and Compensation

The Classification Section developed and implemented classification policies and procedures for all positions below the senior officer level. This section also implements classification standards, systems, and audit programs.

Pay research was begun to support a new round of collective bargaining in 1981.

Staff Development and Training

The Staff Development and Training Division, formed in 1980, coordinates the activities of the Office of Native Employment, the In-Service Training Section and the Staff Training Section. The division promotes native employment and training within the government and coordinates training programs.

The Office of Native Employment provides information on employment within the government and counsels individuals on career choices. It provided an information package designed to assist native northerners. Of a total staff of 2 800 government employees, 840 are native people, which represents about 27 per cent of the overall personnel strength of the government. The Office of Native Employment started the process of developing action plans with departments to facilitate the employment of natives throughout the public service. The In-Service Training Program provides professional training to northerners both on-the-job and at academic institutions and prepares trainees for officer level positions. In 1980 there were a total of 70 trainees.

During 1980, the department offered 48 courses, as 780 employees received training in a variety of subjects.

Twelve employees were granted education leave to pursue baccalaureate level studies at a number of Canadian universities and colleges. This program allows employees the opportunity to pursue academic programs complementary to their jobs.

Department of Information

The Department of Information extended its efforts to communicate with northern residents through audio-visual and multi-media approaches.

In 1980 four communities received television and regional radio services through the department's northern communications program. Facilities were installed in Sanikiluaq, Hall Beach, Holman Island and Snowdrift. There are now 10 communities with equipment supplied by the Department of Information. Seven of these communities have tied a local radio station into the satellite package and the other three are considering the option.

Six more communities are scheduled to receive facilities in 1981-82: Lac La Martre, Repulse Bay, Lake Harbour, Broughton Island, Clyde River and Sachs Harbour.

There are now 25 community radio stations in operation. The Department of Information provides grants to help meet operational costs.

The Department of Information organized an experimental video-conference via Anik B satellite during the Legislative Assembly session in Baker Lake in June. The service between Yellowknife and Baker Lake was provided in conjunction with the federal Department of Communications, which installed satellite dishes and related equipment.

Public Affairs

A public relations program on energy conservation was produced by the Public Affairs Division. The promotion included animated television spots, payroll stuffers, newspaper inserts, posters, radio promotions and a variety of stickers and decals. The TV and radio messages on energy conservation were produced in English, two Inuit dialects, and Slavey, Dogrib and Loucheaux. All written material was produced in English and Inuit syllabics and western orthography.

A half-hour 16 mm color documentary film on Inuit sealing was produced for Kissaniliyeeet, an Inuit organization involved in the welfare of Inuit seal hunting and skin preparation for market. This production involved filming in Vancouver, Newfoundland, Montreal and on the sea ice east of Pangnirtung. Independent northern film-makers were involved.

The audio-visual section assisted the Native Communications Society of the western NWT with production of a cultural historic film in the Nahanni area. A film seminar was developed for independent film-makers in the North and several shorts were produced for television use.

Publications and Production

Implementation of a new visual identity program by the government was a major undertaking of the Publications and Productions Division in 1980. An introductory booklet, outlining policy and general guidelines for usage, was produced and distributed to government staff. Meetings were held with various government departments to facilitate an orderly implementation of the program.

A publications distribution centre was developed in conjunction with the central warehouse operation of the Department of Government Services. The centre will store all government publications under one roof and will give the public better access to government information.

An arctic wildlife poster series is being marketed in schools across Canada. The Hudson's Bay Company was given a southern exclusive to retail a collection of Inuit and Dene photographs to be called "the traditional life series". Plans are under way to test market the Department of Education's children's magazine "PIK" in southern schools.

Plans are also under way for the Territorial Printer to begin producing NWT ordinances, presently produced by the Queen's Printer in Ottawa. The Territorial Printer will be responsible for the ordinances starting with all new material during 1980.

Interpreter-Translator Corps

One of the corps' major responsibilities continues to be the provision of simultaneous interpreting service for sessions of the Legislative Assembly. The enlarged 22-member assembly and its greater use of the committee system, increased the workload for the corps in 1980. This was true for both oral interpreting work and written translations.

In 1980, the corps graduated four interpreter-translators and took in five new trainees. In addition to providing training and upgrading for its own members, it continued to open workshops to people outside the corps. Workshops were held in Rankin Inlet and Frobisher Bay in 1980.

The corps continued its involvement in Inuktitut language development. Corps representatives attended the annual Inuktitut word conference in Rankin Inlet in August and was a major contributor to the development of political and legal English-Inuktitut word equivalents.

The Interpreter Corps began to compile word equivalents and program them for computers. This would permit greater flexibility in language development and enable interpreter-translators to respond more effectively to communication requirements.

Department of Public Works

The Department of Public Works designs, constructs, acquires, operates and maintains all the buildings, technical facilities and services required for the Government of the NWT. This includes the operation of ferries, vehicles and heavy construction equipment and the maintenance and reconstruction of roads and highways.

The total operations and maintenance budget for the department in 1980 was approximately \$63 000 000. As well, capital works designed and built by the department were valued at about \$38 000 000.

Some \$30 000 000 or 40 per cent of the operations and maintenance budget was spent on utility costs. In order to alleviate this, a yearly program was established for all energy conservation matters. This includes the retro-fitting of existing systems and upgrading standards to provide for higher energy efficiency in new projects.

Contracts and Administration

A recently-formed Contracts and Administration Division accounts for the quality, effectiveness and efficiency of department processes, including contracts and tenders, recording systems, finance and accounts, personnel and administration, historical building cost data, research and development. The division is involved in the problems of northern preference in construction contracts, the increase of native labour and local contractors in the NWT construction industry and bonding of NWT contractors.

As part of an overall program to reduce the number of government-owned houses by selling them to employees, 58 lease-to-purchase agreements were signed over the past two years. In 1980, eight additional agreements were completed and negotiations are under way for ten more.

A yearly \$2 500 000 energy conservation program has been started within the building and works section. This has included the replacement of more than 700 electric hot water tanks with energy efficient oil fired units in staff housing, replacement of 40 watt fluorescent lamps in government buildings with 35 watt low energy type, upgrading and retro-fitting buildings of high energy use, and instituting a computerized energy consumption recording system for all works.

The individual regions are responsible for the operation and maintenance of the current inventory of some 6 000 000 square feet of buildings and 1 200 pieces of mobile equipment.

Construction activities in 1980 included a school building to replace one lost to fire at Pine Point. The program also included a major addition and upgrading at Matonabee School and an addition to the Galena Heights School. Construction commenced on a replacement school for Rankin Inlet and improvements were carried out at Rae Lake and Lac La Martre. Panellized classrooms were supplied to the communities of Igloodik and Repulse Bay.

Planning is currently under way for the expansion of educational facilities at Clyde River, Norman Wells, Lac La Martre, and Gjoa Haven.

Community service buildings containing community offices and recreation facilities were erected at Broughton Island and Paulatuk. Community office facilities were constructed at Cambridge Bay, Tuktoyaktuk, Cape Dorset and Aklavik. Also included in the overall construction program was an office/firehall, constructed in Spence Bay by a local labour force under the direction of DPW.

Technical guidance and assistance was given to the City of Yellowknife in the planning of a new arena.

Municipal works handled by the Engineering Division were for water supply, sewage treatment and solid waste disposal. Studies, design and construction operations were carried out over the year in 50 different communities. The work was valued at about \$16 000 000 with major projects done in Rankin Inlet and Frobisher Bay.

The tank farm section, responsible for constructing storage depots for petroleum products, carried out replacement programs in three communities, expansion programs in five settlements, upgrading programs for six installations, and metrification of the dispensing units in about half the localities in the territories.

Highway maintenance included the Yukon border to Peel River section of the Dempster Highway for year round operation. It is expected that maintenance of a further 74 km of the Liard Highway will be handed over in the near future to the territorial government.

Ferry operations were conducted on the Yellowknife Highway crossing of the Mackenzie River, the Mackenzie Highway crossing of the Liard River and the Dempster Highway crossings of the Peel River and Mackenzie River.

A surplus tug (M.V. *Hay River No. 1*) was obtained from the Canadian Coast Guard and used with a leased barge at the Peel River. This will continue until a permanent cable ferry can be commissioned for this site. Thereafter the vessel will be positioned at the Mackenzie River crossing at Camsell Bend.

Road construction projects included a light pavement overlay to protect the pavement surface on the Hay River Highway between Enterprise and Hay River. Light pavement construction between Pine Point and Hay River was completed in 1980. The reconstruction of the Ingraham Trail continued in 1980 with 14 km from Vee Lake Road to Prosperous Lake prepared for the application of a light pavement surface in 1981.

Department of Justice and Public Services

The Department of Justice and Public Services administers justice in the Northwest Territories, providing legal services, court (supreme, territorial and justice of the peace) services, police services and legal registries. A legal aid plan is administered by a Legal Services Board. The department is also responsible for the public services of safety, library, consumer services and the Northern Heritage Centre.

Agreement in principle was obtained in 1980 for the transfer of mine safety services to this department from the federal government.

The department also administers the police services agreement, which provides for the services of the Royal Canadian Mounted Police in the Northwest Territories.

Legal Division

The Legal Division provides legal advice and services to all departments of the government and to the Executive Committee. This includes providing legal opinions, drafting of legal documents and representing the government in various courts of the territories.

The Legal Division also drafts territorial regulations and bills for submission to the Legislative Assembly. In addition, the public trustee office carries out the function of administering estates in the Northwest Territories and the registrar of securities administers the provisions of the securities ordinance.

Court Services

The Supreme Court is comprised of one resident judge and a support staff of six. There are two territorial court judges in Yellowknife and one in Hay River.

During the past year greater emphasis was placed on the involvement of native people in the administration of justice. More native people were appointed as justices of the peace and as coroners. More emphasis has also been placed on proper training for justices of the peace and the introduction of recording equipment in the courts.

The NWT Supreme Court rules have become a reality. Previously the courts followed the Alberta Supreme Court rules.

Legal Registries — Land Titles

Companies, Societies, and Cooperative Associations Registries is responsible for incorporating both profit and non-profit corporations, registering corporations created outside of the Northwest Territories and maintaining information on all corporations doing business in the Northwest Territories.

While the number of registered dealings in land stabilized in 1980, corporate activity increased. There are now 3 124 corporations on the corporate register. This figure reflects the removal of 182 corporations that failed to file annual information reports. There were 2 148 registrations during the past year in the document registry.

Legal Services Board

The Legal Services Board provides legal aid to eligible persons and acts as carrier agency for Malliganik Tukisiiniakvik and the Northwest Territories Native Courtworker program. Both these groups have applied for regional committee status under the legal services ordinance and will, in the coming year, assume many of the functions now performed by the board staff.

Between April 1, 1979, and March 31, 1980, legal aid handled 1 295 cases at a cost of \$333 871. In addition, more than 1 100 people sought the assistance of the Northwest Territories Native Courtworkers and almost 300 sought the assistance of Malliganik Tukisiiniakvik.

Safety

The Safety Division has a number of sections organized to deal with fire, industrial safety, occupational health, labour and mechanical and electrical matters.

Although there were fewer fires in 1980, fatalities, injuries and dollar losses increased. Arson is still a main factor in fires.

There were 181 reviews of projects and structures within the NWT. This increased over the same period in 1979 by approximately 25. There were 15 investigations of fires attributed to arson, vandalism and negligence or carelessness.

There was considerable training of fire departments, trades people, government agencies, school children and the public, all in cooperation with fire chiefs throughout the NWT.

A basic objective in promotion of occupational health and safety is effective dissemination of information. An agreement in principle was reached with the Canadian Centre for Occupational Health and Safety to establish a pilot data base terminal for occupational health and safety information. This system will supply information to workers, government, employers and researchers in industry.

Current occupational health programs include such developments as insulation overview, ventilation studies and recommendations for fumes and dust exposure occupations, noise identifications and hearing conservation programs, hazard and product warning distribution, and use of hazardous chemicals in schools.

The Labour Section administers Northwest Territories legislation respecting employment in the private sector. An amendment was made to the employment agencies ordinance which allows persons and organizations to operate employment agencies for profit, subject to regulation.

The Mechanical/Electrical Section implements the electrical protection and boiler and pressure vessels ordinances. This involves surveying plans and designs to ensure conformity with adopted safety standards, examining and certifying persons and equipment, investigating accidents and fires and inspecting installations.

Consumer Services

A total of 1 586 people were given motor vehicle tests during the year ended March, 1980. Of those tested, 59 per cent were successful. There were 18 416 drivers licensed, compared to 18 923 in the previous year. There were 1 002 accidents reported in 1979. Of these, four caused fatalities, 159 caused non-fatal injuries and 839 involved property damage only.

The Northwest Territories Public Utilities Board was established to deal with applications brought before it by utilities in the Northwest Territories. Over the past year the board held four public hearings into rate applications submitted by such utilities as Alberta Power Ltd. and the Northern Canada Power Commission.

There was an increase in public awareness of the board's activity over the year, and as a result, more public involvement in rate application hearings and inquiries is anticipated in the future.

The Highway Transport Board, appointed by the commissioner to regulate the commercial trucking industry in the Northwest Territories, processed 185 applications for certificates of operating authority in 1980. Of these, 79 were issued to companies or individuals resident in the territories and 106 to non-resident companies, mainly from Alberta.

The three member board met during the year at Hay River, Norman Wells, Eagle Plains, Whitehorse, Inuvik and Yellowknife. The board met with its Yukon counterparts on concerns regarding increasing truck traffic on the Dempster Highway, charter bus service and commodity categories.

A total of 124 insurance companies were licensed to sell insurance in the NWT. There were 335 licences and permits issued to professionals practising in the NWT, including 200 permits to individuals providing health services on behalf of Health and Welfare Canada. A total of 650 business licences were granted to businesses operating in unincorporated areas.

The Consumer Affairs Office, which responds to inquiries and mediates in disputes relating to the consumer protection ordinance and landlord and tenant ordinance undertook a major policy review as the lottery licensing agency. Efforts were made to obtain as much public input as possible by requesting submissions from interested groups.

The vital statistics registry issued certificates for 1 151 births, 279 marriages, 190 deaths, 152 adoptions and 27 name changes.

Prince of Wales Northern Heritage Centre

As of October, 1980, about 34 000 people had visited the Prince of Wales Northern Heritage Centre since its opening in the spring, 1979. The Northern Heritage Centre is open year round with extended hours from June through September.

The centre hosted various activities in conjunction with "A Century of Canada's Arctic Islands, 1880-1980", a symposium presented by the Royal Society of Canada in Yellowknife in August. A film night and an archives open house provided conference participants with the opportunity to view rare northern film footage and to become acquainted with the rapidly growing archival collections.

The archives of the Northern Heritage Centre serves as the official depository for documents pertaining to the Northwest Territories. Over the past year more than 300 collections were deposited. Among the more outstanding were the archives of the Metis Association of the Northwest Territories, the working papers of the Drury Commission, some 8 000 maps transferred from the national map collection, handwritten letters from the explorers Nansen and Back and a framed certificate signed by Queen Elizabeth II approving the coat of arms for the Northwest Territories.

With the completion and opening of the north gallery in January, the emphasis within the Curatorial Section was placed on collection management. Close to 1 000 artifacts, specimens and works of art became part of the permanent collection in 1980. They were primarily in the areas of the fine and decorative arts and ethnology, and included a large collection of Inuit sculpture and artifacts which have been loaned on a permanent basis to the Nunatta Sunaquatangit Museum Society in Frobisher Bay.

Over 80 special events for schools and the general public took place, including a two week hide-working workshop conducted by the Native Women's Association. For the second year, more than 500 people participated in International Museums Day celebrations with sewing demonstrations by women from Rae, tours of the working areas and films.

A museum extension service was begun, designed to make the varied resources of the Northern Heritage Centre available to communities. Visits were made to a number of community museums. Research design and production also began on two travelling exhibitions.

Twenty-two archeological permits were granted during the 1980 field season. A variety of archeological field projects was undertaken in the Northwest Territories, ranging from problem-oriented research to site inventories. The Northern Heritage Centre continued as the major funder of the Northern Cultural Heritage project, an archeological field school operated on Somerset Island by two senior graduate students. It is designed to train high school students in archeological field techniques.

Library Services

In March, the Legislative Assembly requested that a formal policy and standards be drawn up within 12 months for the territorial library system. It was agreed that this should be performed in conjunction with an NWT Library Advisory Board, which was formed later in the year.

Statistics for the year ending March 31, 1980, showed an increase in circulation to 121 496.

In September, an agreement was signed by the responsible ministers in Alberta and the Northwest Territories, enabling NWT Public Library Services and Alberta Culture, Library Services, to develop closer cooperation.

Department of Finance

The Department of Finance directs financial management and services in government operations.

During 1980 the department was involved in the development of a new financial information system, training and documenting financial procedures, and finalizing the financial administration manual.

The Treasury Division collects, manages, controls and reports on all revenues for the government. The division does fiscal and economic planning and develops policies for taxes, borrowing, investments and cash management.

During the past year more emphasis was placed on the control of government assets, insurance and risk management. New policies, procedures and directives were developed. In the coming year greater emphasis will be placed on sources and collection of revenue and the development of a centralized control system and procedures for recording all fixed assets and revolving fund inventories.

The Comptrollership Division prepares financial management information including the territorial accounts. It develops, coordinates and implements financial policies and procedures which provide for the effective control and reporting of all government expenditures.

During the past year the division developed financial procedures and financial systems and training programs for financial staff within the government. In 1981 it will establish and maintain effective financial information systems and financial controls.

Financial Management Secretariat

The Financial Management Secretariat is a central agency of the government which provides advice and support services to the Financial Management Board, a sub-committee of the Executive Committee.

The secretariat is responsible for the planning co-ordination, analysis and consolidation of the operating budget of the Government of the Northwest Territories and other budget information for the Legislative Assembly. The secretariat provides working support for the government's participation in intergovernmental financial negotiations with the federal government.

In 1980 the secretariat studied alternative financial arrangements with the federal government including formula financing. The secretariat, formerly the Budgets and Fiscal Planning Division, assisted in the development and coordination of a government-wide management accountability budgeting system. In 1981 the financial planning process will be refined and expanded.

Audit Bureau

The Territorial Audit Bureau provides a comprehensive internal audit program, performs special audits on external agencies funded by the government, and serves as Provincial Auditor General. Fulfilling these roles enables the bureau to provide a variety of work and training to native and other employees. During the past year, two employees attained their professional accounting designations while two others achieved auditor status from training positions.

The deputy commissioner is chairman of the audit committee. The terms of reference and role of the committee have been refined to include a review and formal approval of all audit observations raised and the corrective action proposed. This is accomplished through the appropriate executive members and their deputy ministers or directors.

Following consultation with the auditor general's staff, the bureau was given responsibility for the internal audit of the Territorial Housing Corporation. It was instrumental in setting up a special firm and review of audit committees for the corporation's board of directors at the annual meeting in Hay River. An internal audit program is being developed for the corporation, and audits will be included in the 1981-82 work plan.

The bureau reviewed many systems. It also answered calls for special audits, most of which were performed in smaller communities where assistance was provided to local staff.

Government Services

The Department of Government Services, organized in 1980 as recommended by the commissioner's task force on administration, provides planning and direction for materials management, systems and computer services, and other services to support government operations.

Supply Services

The Supply Services Division purchases, transports and warehouses goods and services. It also coordinates the annual sealift.

Adjusting of resupply methods to respond to the economic realities of the 1980's highlighted the Transportation Section's activities. A major accomplishment of the period was the phasing out of the Bear River Northern Transportation Company Ltd. barge system and introduction of road between Fort Norman and Fort Franklin.

In 1981-82 the Fort Franklin winter road to Wrigley will be extended to establish a connection to the existing Mackenzie Highway. Efforts toward gaining more northern control of resupply systems will also continue.

Petroleum Products

A Petroleum Products Division was established separate from supply services. Because of the present world-wide market situation, this division will handle one of the more sensitive issues to face the territories during the 1980's.

Fuel costs increased significantly but in spite of market shortages each community was provided with an adequate supply of petroleum products. Improvements in the program included the completion of model tank farms in Whale Cove, Chesterfield Inlet, Fort Norman, Pelly Bay and Pangnirtung. Aviation facilities were extended to Rankin Inlet, Coppermine, and Cape Dorset. With better tank farm facilities and the implementation of a new information system, the program can concentrate on improved services at regional and community levels.

Systems and Computer Services

The Systems and Computer Services Division coordinated the installation of "mini" computers in each of the four regions. These computers, together with the two headquarters' computers in Yellowknife, form a network to transmit and receive information on a variety of subjects. This facility can tell a program manager such immediate things as the exact financial status of any program compared to that program's budget.

Liquor Control System and Liquor Licensing Board

The Liquor Control System purchases, imports, distributes and sells alcoholic beverages to the residents of the Northwest Territories. The system also provides administrative support to the Liquor Licensing Board.

During the fiscal year ending March 31, 1980, gross sales reached \$31.4 million, an increase of 4.7 per cent over the previous year. The amount of alcohol consumed decreased by 2.2 per cent.

Use of local option to vote on restriction or prohibition of alcohol remained active. As of August 1, 1980, prohibition was in force in 15 communities, while restriction was being exercised in seven communities.

Workers' Compensation Board

The Workers' Compensation Board of the Northwest Territories is responsible for the administration of the workers' compensation ordinance and the adjudication of all matters arising under that ordinance.

During 1980, 2 500 new claims were processed. The total registration of employers was approximately 3 700.

For accidents that occurred prior to October 1, 1974, disability pensions are based on maximum yearly earnings of \$12 000 instead of those in effect for the year of the accident. Widows' pensions are \$330 per month and children's pensions are \$105 per month. For accidents that occurred after September 30, 1974, disability pensions are based on maximum yearly earnings of \$16 800. Widows' pensions are \$462 per month and children's pensions are \$105 per month.

A merit rebate program was introduced in 1979 to encourage accident prevention practices among employers. It is estimated that some \$650 000 will be rebated to those employers with good claims experience.

Northwest Territories Housing Corporation

During 1980 the NWT Housing Corporation moved into its program of devolution. Rental houses are being designed by the people; housing needs are being identified and proven by the community; training programs and housing conferences are being requested by housing associations.



Construction, Lake Harbour, NWT.

The corporation's capital budget for 1980 totalled \$22 973 000 with 74.1 per cent from Canada Mortgage and Housing Corporation (CMHC) and 25.9 per cent from the Government of the Northwest Territories. The corporation's operations and maintenance budget for 1980 was \$31 010 100 with 22.6 per cent from CMHC and 64.3 per cent from the Government of the Northwest Territories. The collection of rent contributed the remaining 13.1 per cent of the operations and maintenance budget.

The 1980 construction program included 54 Woolfenden designed units, 29 stick-built single family units, 18 single persons' units, 16 territorial government staff units and seven demonstration units. In addition to new construction, 216 older units were brought up to National Housing standards.

The Woolfenden type units were erected in Cape Dorset, Fort Norman, Fort McPherson, Baker Lake, Chesterfield Inlet, Eskimo Point, Rankin Inlet, Repulse Bay, Whale Cove, Holman Island and Sanikiluaq. These units were improved over the 1979 design by insulation, an improved vapour air barrier system, an overhead heating distribution system and a smaller, more efficient furnace.

The rehabilitation program involved 216 northern territorial housing units built prior to 1974. Upgrading included plumbing, heating systems, kitchen facilities, and electrical systems.

The seven demonstration units were designed by the people of the Keewatin. These units have increased insulation values, a 30 000 B.T.U. heater that will operate during power failures, an air to air heat exchanger and an oil fired hot water heater to conserve energy and save on the cost of power. It is anticipated that there will be a 55 per cent fuel saving compared to the 1978 units.

Home ownership, as an alternative to rental housing, is desired by many people in the territories. The small settlement home assistance grant program (SSHAG) was approved by the board of directors to provide a forgivable grant for the cost of purchasing and freight of finishing materials for a house built basically of indigenous materials such as logs. The program was well received by the people in small communities

throughout the Mackenzie Valley. The "pilot" program provides for a forgivable loan of up to \$15 000 which, this year, was supplemented by funds for labour from the federal government's LEAP program.

Nineteen log homes are well on their way to completion in the communities of Fort Resolution, Fort Smith, Fort Simpson and Fort Rae.

A rural and remote housing program is offered by the Housing Corporation in partnership with CMHC to give lower income families an opportunity to own their own home at mortgage rates geared to income. In 1980 seven families completed building and/or purchased houses under this program in the communities of Hay River, Fort Resolution, Inuvik and Fort Smith.

The housing associations of the Keewatin, Cambridge Bay and Frobisher Bay districts formed Federations of Housing Associations which provide a strong united voice in each district. Each federation has a design committee formed by a representative from each of the housing associations in the district. This committee works with the Housing Corporation Construction Division and consulting architect to design or redesign the housing units to be built the following year. This process was in effect in the Keewatin in 1980.

Training has become a focal point in all of the corporation's activities. Knowledge and understanding provided by training and education will produce total devolution.

A Baffin housing conference took place in Pangnirtung in October, providing a forum for the corporation, the housing associations-councils, members of the Legislative Assembly, territorial government and CMHC. Information and ideas were exchanged and resolutions passed which will be considered by the corporation board of directors.

A model project for construction training, which originated in Pangnirtung in 1978, continued to demonstrate the construction capabilities of local people and their interest in acquiring carpentry skills. Similar programs were started in Igloodik, Baker Lake, Sanikiluaq, and Frobisher Bay. ■

Government of the Yukon Territory

GYT



The 16 member Yukon Legislative Assembly comprises 11 Progressive Conservative members, two Liberal, one New Democrat and two independents.

Responsibilities

The government administers Yukon in accordance with the Yukon Act, Yukon Ordinances and applicable federal laws.

Executive Council Office

Responsibilities

The Executive Council Office provides advisory, administrative and secretariat services to the Executive Council, the Cabinet Committees on Legislation and Finance and the Permanent Advisory Committee on Internal Management and Economic and Social Planning. It also provides administrative and executive support to the offices of the government leader and the commissioner. Information concerning changes in legislation and internal policy guidelines are provided to all Government of Yukon departments. Financial and personnel management support services are provided to the Intergovernmental Affairs Office, the Land Claims Secretariat and the Internal Auditor.

Review 1980-81

Douglas Bell was appointed commissioner of Yukon for a two year period commencing January 1, 1981. Mr. Bell was assistant commissioner and assumed the post of administrator in October, 1979, when Commissioner Ione Christensen resigned.

The Executive Council membership, until January 30, 1980, consisted of the Hon. Christopher W. Pearson, president; and members the Hon. Hector Daniel Lang, the Hon. Douglas Roy Graham, the Hon. Meg Sutherland McCall, and the Hon. Edward Geoffrey Lattin. Mr. Graham resigned January 30 and his portfolios were distributed among the remaining members.

Portfolio responsibilities for the Executive Council members at the end of the fiscal year were: Mr. Pearson - Executive Council Office, Finance, Public Service Commission, Intergovernmental Affairs and Justice; Mr. Lang - Renewable Resources, Tourism and Economic Development, Government Services, Consumer and Corporate Affairs and Workers' Compensation Board; Mr. Lattin - Highways and Public Works, Municipal and Community Affairs, Yukon Housing Corporation and Yukon Liquor Corporation; Mrs. McCall - Health and Human Resources, Education, and Information Resources.

The Executive Council visited every Yukon community during 1980 and plans similar informal visits during 1981. Members also visited eastern arctic communities as guests of the Northwest Territories Government. The responsibilities for Intergovernmental Affairs, the Land Claims Secretariat, and the Pipeline Office were transferred and consolidated into a new department of Intergovernmental Relations effective April 1, 1981.

Plans for 1981-82

The Executive Council is preparing a policy to make the new structure of government formal, work towards an early settlement of Yukon Indian Land Claims and promote economic stability in Yukon.

Yukon Public Service Commission

Responsibilities

The commission is the agent of the Yukon government in all public service staffing matters and determines and administers the terms and conditions of employment. At September 1, 1980, the total permanent Yukon government staff was 1 531 person years, including 1 079 full time positions, 45 part-time positions and 303 teacher positions. There were 148 casual person years.

Recruitment and selection

A total of 481 permanent civil service appointments were made. Of these, 97 were filled through promotion and 58 through internal transfers. Approximately 92 per cent of all appointments were Yukon residents while the remaining 8 per cent were specialized professional and technical persons hired from outside Yukon.

Staff Training and Development

The commission continued to emphasize training and development and is currently attempting to hire a full-time training coordinator. During the year, short courses were provided by consultants and staff. As well, some employees were sent to specialized courses in southern Canada. A number of employees were reimbursed for tuition fees for courses ranging from trades training, skill development and post secondary education. A total of 598 persons were provided with training. This total includes a number of employees who completed more than one training assignment.

Classification and Employee Relations

During the past year, the division continued to revise portions of the classification and pay plans of the government. The deputy minister classification and pay plan review, embarked upon in the previous year, was implemented April 1, 1980. A review of the management class series is under way. It is anticipated that this major review will be implemented during the early part of 1981-82. Contract negotiation difficulties with the Public Service Alliance of Canada were resolved after matters in dispute were referred to a conciliation board and the parties entered into a post-conciliation negotiating relationship. An agreement was signed with the Yukon Teachers' Association after binding arbitration. During the course of the year, responsibility for classification standard and policy development was split off from the operations component.

Employee Benefits

The Employee Benefits Division handled 34 800 transactions in the fiscal year, including 3 280 adjustments in pay. Economic increases were processed for public servants, teachers and casuals. This heavy workload was increased by a decision of the government to make retroactive payments to all employees including casuals, including those no longer employed.

Safety and Security/EMO

Safety education and inspection, particularly in Highways and Public Works, continues to occupy much of the coordinator's time. All workshop and highway maintenance facilities are visited at least twice a year. Accidents are investigated and reports made. Winter survival courses were held in January and February. First aid courses continued. EMO was alerted to the flood picture at Old Crow last spring and set up the Emergency (Operations) Centre when waters of the Old Crow and Porcupine rivers inundated lower portions of the settlement and airstrip. The threat of disaster was relieved with rapid lowering of the water level when an ice jam broke a few hours after the threat. EMO at Faro and the Yukon Disaster Committee were active in an electrical power failure emergency at Faro January 28 — February 7. Stand-by diesel generation (NCPC) averted a major emergency. A booklet, "Emergencies Happen — Are You Prepared?" was printed by EMO and distributed to all households. Reprints are planned for future distribution. Security measures for the protection of public buildings, equipment and supplies were maintained. Minor thefts and vandalism continue to occur.

Directorate of Intergovernmental Affairs

Responsibilities

The directorate provides support services to the elected government leader in coordinating Yukon government activities with such other levels as provincial, territorial and state. This covers a broad range of intergovernmental relations. Responsibilities include providing secretariat support services to the Federal Interdepartmental Coordinating Committee and representing the Yukon government on this and other ACND subcommittees. Protocol matters for the Yukon government are also a responsibility of the directorate.

Review 1980-81

A close relationship has been maintained through the Federal Interdepartmental Coordinating Committee (FICC), which is a permanent subcommittee of the Advisory Committee on Northern Development (ACND). Three FICC meetings were held during this period. Two of the meetings were in communities outside of Whitehorse, Haines Junction and Watson Lake. At each quarterly meeting of FICC, a separate meeting was scheduled with the local government body where elected officials and the public were given the opportunity to discuss matters of concern. Major initiatives addressed by FICC during the year included the preparation of a policy paper and recommendations on taxation of northern benefits. It was forwarded to the Minister of Finance and other cabinet officials. Discussions were held with senior officials of the Treasury Board and the Public Service Commission regarding measures which may be implemented to counter the potential adverse impact of such major projects as the Alaska Highway Gas Pipeline. Two new member departments were introduced to FICC: the Department of Supply and Services, and the Department of Fisheries and Oceans.

A meeting of the Alaska-British Columbia-Yukon Coordinating Committee was held in September, 1980, in preparation for a meeting of the Heads of Government of the three jurisdictions. The directorate represented the Yukon government at a meeting of officials from British Columbia and Alaska in Anchorage to discuss energy and transportation issues leading to a number of agenda issues for the Heads of State meeting. The meeting between the Premier of British Columbia, the Governor of Alaska and the Government Leader of Yukon took place in January, 1981. A working relationship was maintained with the Government of Alberta through its department of Federal Intergovernmental Affairs (FIGA) and a visit of the director, Northern Affairs, FIGA, was coordinated by the directorate to familiarize this official with Yukon government priorities. A close relationship was maintained with the office of the Commissioner of the Northwest Territories and the office of Intergovernmental Affairs of the Government of Northwest Territories.

The department continued to monitor major federal capital projects in Yukon such as the airport terminal for Whitehorse and the Canada Customs facility at Beaver Creek. The government advises that construction of the new facility at Beaver Creek will commence in 1981. The long standing issue of the proposed Scientific Resource Centre in Yukon continues to be monitored by the directorate, which coordinates the Yukon government interest in this facility as well as those of the local federal agencies. The most recent meeting on this matter took place in March, 1981, and an early decision on this project is anticipated.

A number of major protocol activities were coordinated including the annual visit of the heads of diplomatic missions to Canada, the visit and Yukon tour of the Governor General and family, and a number of consular and diplomatic visits. The Intergovernmental Affairs Officer represented Yukon at the annual Provincial Protocol Officers conference in Regina in October, 1980. A number of visits of senior executives were coordinated, such as the centennial visit of the board of directors of Imperial Oil, and the California Press Association. Planning has commenced with federal, provincial and state officials for the dedication ceremony in May, 1981, of the Klondike Highway between Whitehorse and Skagway.

Plans for 1981-82

A senior level Yukon government office will open in Ottawa to help foster a close and cooperative relationship at the senior executive level between the Yukon government and the Department of Indian Affairs and Northern Development, as well as with other federal agencies. A new Department of Intergovernmental Relations will be created here, including Intergovernmental Affairs, the Pipeline Branch, the Yukon Government Land Claims Secretariat, and a Department of Policy Coordination.

Land Claims Secretariat

Responsibilities

The Land Claims Secretariat is a research unit responsible for developing Yukon government positions concerning the settlement of native land claims and the constitutional development of Yukon.

Review 1980-81

After being interrupted by the February 18, 1980, federal election, Yukon Indian Land Claim negotiations resumed on June 15, 1980, under a new Chief Federal Negotiator, Dennis O'Connor, Q.C. Mr. O'Connor, a former magistrate in Yukon, was appointed on May 23, 1980. Willard Phelps continued as the Yukon government negotiator. Similarly, Yukon government participation in the process remained unchanged in accordance with the federal-territorial Memorandum of Understanding on the Process for Negotiating Native Claims in the Yukon Territory. Intensive negotiations have been proceeding since June and substantial progress has been made. One Agreement with Respect to Providing Interim Benefits to Yukon Indian Elders has been made public and is being implemented. Negotiations are continuing towards an overall Agreement in Principle. Government of Yukon representatives have also been actively engaged in land claim deliberation of the Committee for Original Peoples' Entitlement (COPE). An exploratory session was held on April 15, 1980, between representatives of COPE and officials of the federal and territorial governments. After a statement by the Minister of Indian Affairs and Northern Development that the COPE Agreement in Principle should be honored, the Government of Yukon initiated a public information campaign to show the impact of the COPE Agreement in Principle on Yukon. The Minister appointed Senator Davie Stuart as chief federal negotiator for the COPE claim. One of Senator Stuart's first initiatives was to meet with the Yukon Cabinet regarding Yukon concerns. Another exploratory session involving representatives of all three parties was later held in Vancouver. Subsequently, a formal negotiating session was held in Ottawa in September. These meetings marked the first time Yukon government representatives had attended a formal COPE Claim negotiating session. As a consequence of these deliberations, the parties agreed that two resource management models would be developed for northern Yukon: one based on the COPE Agreement in Principle and the other based on the Yukon government position. Also at this time, the Government of Yukon appointed John McGilp as its COPE claim adviser. Mr. McGilp had been the assistant to the previous federal Yukon claims negotiator, Dr. Bob Holmes.

The Government of Yukon tabled its Northern Yukon Resource Management Model in November. The model based on the COPE Agreement in Principle was also tabled. Senator Stuart received instructions from the Minister of Indian Affairs and Northern Development December 24, 1980. Negotiations, however, broke off and are still pending.

During this period, the Land Claims Secretariat undertook a considerable amount of constitutional research in relation to the development of responsible government in Yukon. Particular attention was focused on developing Yukon government positions on the repatriation of the Canadian Constitution.

Plans for 1981-82

The Land Claims Secretariat will continue to participate in native land claim negotiations and undertake further constitutional and land claims research. Effective April 1, 1981, the secretariat will function under the aegis of the new Department of Intergovernmental Relations.

Pipeline Branch

Responsibilities

The Pipeline Branch coordinates all Yukon government activities in relation to the proposed Alaska Highway Natural Gas Pipeline. During 1980 this coordinating mandate was expanded to include responsibility for all Beaufort Sea development-related activities.

Review 1980-81

During the past year the branch continued to coordinate Yukon government actions relative to the pipeline. It did liaison with the Northern Pipeline Agency and federal government departments in order to ensure that Yukon interests were being considered in all pipeline matters.

Officers of the branch ensured that all land use authorizations requested by the proponent were reviewed and that the activities were carried out in accordance with those authorizations. Land use applications were received for a number of activities, including a geo-technical and geo-physical drilling and testing program, right-of-way surveys and boundary delineations, work camp and compressor station studies. Considerable regulatory and inspection work was carried out in response to proponent activities prior to and during construction of the Quill Creek pipeline test facility near Burwash.

The branch coordinated a property assessment of the entire proposed pipeline right-of-way and began negotiating a right-of-way agreement. In addition, policy planning was begun on such subjects as granular material location and use, and on pipeline crossing regulation.

The branch continued work on the development of a pipeline property taxation system and on the terms to be established for a Yukon Heritage Fund.

National Energy Board hearings were monitored. The branch participated in preparation of the Yukon government submission to the board's hearings on the southern pre-build sections of the pipeline. During construction, several branch officials toured construction areas to gain first hand experience in pipeline construction, assess environmental and socioeconomic effects and observe monitoring and surveillance programs.

The branch participated in a further review of the environmental terms and conditions and proposed several amendments. Branch officials monitored proponent activities from an environmental standpoint and assisted in the assessment of on-going wildlife studies being carried out by the proponent and government.

Branch officials monitored proponent sponsored community meetings, participated in a final review of the socioeconomic terms and conditions, worked closely with Northern Pipeline Agency staff in the development of a plan review process and monitored the socio-economic effects of the Quill Creek project.

The branch worked closely with the Department of Education and the Manpower and Labour Services Branch in the development of pipeline related training programs and in the general review of numerous labour-related subjects.

Work continued on planning the distribution of natural gas to Yukon communities. Branch officials travelled to Regina for discussions with the Saskatchewan Power Corporation.

Additional work was done on the development of a socio-economic impact assessment and mitigation paper and on methods for monitoring socio-economic impacts.

Over the course of the year the branch's coordinating mandate was expanded. One of the new responsibilities involve chairing and coordinating a task force investigating the need for, and preparation of, a comprehensive development assessment and review process. Such a process would be used by the Yukon government to evaluate all significant industrial and resource development proposals to ensure that such projects proceed in a manner that will provide the greatest possible benefits to Yukon with the least possible negative impacts.

The branch also became heavily involved in coordinating government Beaufort Sea activity. In this connection, branch staff met with key petroleum industry officials to gain further Yukon participation in the development. As a result of the initial contacts and the subsequent activities by industry, the branch was designated as the lead agency for all Beaufort related matters. A branch officer was appointed to the Beaufort Sea Task Force, an interdepartmental, intergovernmental team formed to investigate and report on government activities relative to Beaufort development. The group will recommend courses of action.

Another branch official was appointed as Yukon representative on the Provincial Advisory Committee to the Energy Supplies Allocation Board. This federal board is the agency responsible for development and implementation of strategies to ensure the orderly and effective allocation of petroleum products across Canada should an international emergency affect supply. The same official is chairman of the Shaktik Project Review Committee, appointed by the federal Minister of Environment to review and assess the project's compliance with those environmental terms and conditions attached to the project's authorizing permit. The official toured project sites, undertook community meetings and coordinated the preparation of the annual report.

Plans for 1981-82

Effective April 1, 1981, a new department will be created and will assume the functions of the Pipeline Branch. The Department of Intergovernmental Relations will also absorb the existing Directorate of Intergovernmental Affairs and the Land Claims Secretariat. The new department will consolidate the various intergovernmental and coordinating functions of the Yukon government and provide a policy analysis and coordination capability. The department will oversee establishment of an Ottawa office.

During 1981-82 the new department will complete the development assessment process, participate in the development of a pipeline monitoring and surveillance process, and ensure that all aspects of pipeline planning are undertaken in the best interests of Yukon.

The department will represent the Yukon government in all Beaufort related matters and will actively seek a greater measure of Yukon participation in that development.

Priorities for Intergovernmental Affairs and the Land Claims Secretariat will be identified once the new department is fully operational.

Department of Finance

Responsibilities

The Department of Finance ensures that the financial resources of the Government of Yukon are planned, used and controlled in a manner consistent with the priorities of the government. The department manages and controls the Yukon Consolidated Revenue Fund. It assists all departments and agencies in financial matters. The department provides financial advice and assistance to the Executive Council and presents the main estimates, territorial accounts and other periodic financial information to the Legislative Assembly. The department monitors the financial performance of departmental operations and is involved in formulating financial policies, procedures and control.

The Financial Operations Branch keeps financial records of the Government of Yukon, processes suppliers' accounts, processes the government payroll and prepares periodic financial statements including the territorial accounts. It collects and monitors taxes and revenues, handles banking and investments and administers the Heating Fuel Equalization and Home Owners' Grants Program. The Financial Management Branch helps develop fiscal policy, provides financial planning, develops and improves financial systems, coordinates the budget process, prepares the main estimates and monitors the financial performance of departments. The Administration Branch provides administrative and personnel services to the whole department. It provides a program of risk management for the government.

Review 1980-81

The department's emphasis was on direction and guidance in financial matters with better financial information available to the Executive Council. Phase I of the Financial Management Systems Development, a new classification of accounts, was operationally effective April 1, 1980. This became a major building block for further improvements to the total financial information package.

In the 1980 fall session of the Legislature the 1981-82 capital main estimates were tabled and passed. This enables preliminary work to be done on major projects over the winter months in order to publish tender calls and start work as early as possible in the short construction season. In the 1981-82 spring session of the Legislature, the 1981-82 operations and maintenance main estimates were tabled with a new form and content.

<i>Financial Statistics</i>	<i>1980-81 Projected</i>	<i>1979-80 Actual</i>
Revenue, Recoveries, Operating Grants	\$137 952 300	\$124 233 600
Operation and Maintenance Expenditures	93 116 000	85 552 800
Capital and Loan Expenditures	49 891 200	50 766 100

Plans for 1981-82

Undertakings will include continued work on the Financial Management Systems. Further improvements and refinements will be made in accounting and financial administration and control. There will be a review of the financial planning and budgeting process and work on program evaluation will begin.

Department of Education

Responsibilities

The Department of Education has four areas of responsibility: Elementary and Secondary Education, Adult and Continuing Education, Recreation Services, and Manpower Planning. Jurisdiction for the latter responsibility was transferred to Consumer and Corporate Affairs in July, 1980.

Elementary-Secondary Education

There were 4 935 students enrolled in kindergarten to grade 12 in 15 rural schools and eight schools in Whitehorse. This compares to 5 120 in the previous year. School building improvement projects included additions and renovations in Haines Junction, Faro, and at Christ the King Elementary School in Whitehorse. These improvements occurred as a result of grade expansion, enrolment increases, poor existing situations, and changing requirements. Planning was completed for a new school in Pelly Crossing, a new junior secondary school in Whitehorse, and additions and renovations in Old Crow and Carmacks. Construction on all three projects will commence in the spring, 1981.

A new integrated language arts program for grades 1-7 was implemented in September. The introduction of a locally-developed course on "Northern Mythology" reflected the Department of Education's continuing thrust for curriculum adaptation to reflect Yukon content. In the same way, the department supported initiatives of the Council for Yukon Indians in the production of locally prepared materials. The report on rural and small secondary schools found that rural students have difficulties when attending school in Whitehorse. Therefore, grade expansion took place in three communities: Grade 11 in Haines Junction and Teslin, and Grades 8 and 9 in Carcross. The Career and Vocational Education Committee presented its report and recommendations to the Minister of Education in December. The program supporting the introduction of native languages, history, and culture, continued to develop with the publication of curriculum guides for teachers.

A five-year Early French Immersion Pilot Program was introduced in Whitehorse in February. A total of 35 children enrolled in two sessions of kindergarten drawn from all school areas in the city. A second group of kindergarten children will enroll in September, 1981. Instruction is totally in French until the fourth year of the program at which time English language instruction is introduced. Funding for this pilot program is provided through special grants from the Secretary of State. The French Language Centre in Whitehorse continued to serve as a resource centre for teachers, students, and the public.

New and standardized television equipment was purchased for all schools and educational institutions, allowing Yukon to take advantage of new programs. Renovations and reorganization of the A/V Centre prior to September 1981, will provide better service to schools and at the same time make the centre available to teachers in certain areas. The Sixth Annual Superintendent's Meeting and School Committee Conference was held in November with a special focus on alternate programs for Yukon schools.

Resource Corps

The Resource Corps is funded through a Canada-Yukon agreement to provide training opportunities to the unemployed and under-employed. To date the program has focused on projects in such communities as Whitehorse, Carmacks, and Mayo.

The Yukon Teacher Education Program offered a number of University of British Columbia courses in education, arts, and science. This year Education 479, "Yukon Studies", was added to the course selection. In January, 1981, two other U.B.C. courses were offered via Anik B satellite. The course Education 460, "Introduction to Educational Administration", which is a prerequisite for students entering a Master's of Education degree program, was also offered. The program staff includes a coordinator, secretary, part time librarian, six part time local instructors, and visiting professors from the U.B.C. campus. Some 150 participants enrolled in either full time or part time programs. Nineteen students were enrolled full time in the third year or professional teacher training year. Six of the 11 paraprofessional students of the previous year enrolled at YTEP as full time first year university students. One other enrolled on a part time basis. Due to increased enrolments the physical structure of YTEP was extended by adding two portable classrooms and additional office space. Other interior renovations provided office storage space, a duplicating room, Anik B television room, library, and a student common room. The exterior of YTEP was painted and grounds and parking area were improved.

Adult and Continuing Education

The Adult and Continuing Education Branch organizes adult programs in vocational education through apprenticeship, industrial, academic, and language training programs and diploma courses. These programs are made available through the Yukon Vocational and Technical Training Centre in Whitehorse. Other Yukon communities are served through the Extension Services of the Training Centre.

The Yukon Vocational and Technical Training Centre offers re-employment and diploma courses through its three divisions: Academic Business and Applied Arts, Trade and Industrial, and Extension Services. These courses, of five and ten months duration, are supported by the Canada Employment and Immigration Centre. Pre-employment courses included auto transport mechanics, building construction — carpentry, diesel mechanics, electrical (residential and industrial), heavy equipment operation, surveying and welding. Additional training in the trades area was provided through such short courses as a one-week upgrading for electrical contractors, two month pre-trades training for women, a welding upgrading course for welders employed by Cyprus Anvil Mining Corporation, and a weekend training course in air-frames.

The Academic, Business and Applied Arts Division planned a range of programs. Academic upgrading in reading, writing, and mathematical skills were offered. English as a second language is given on a continuing basis. General educational development training enabled 85 students to obtain the equivalent of a high school diploma.

Business education diploma courses provided training for accounting, clerk typists, and secretarial skills. The Certified Nursing Assistants diploma was provided through a five-month theory course at the Vocational Centre followed by a five month practicum at the Whitehorse General Hospital. Courses in business management were given through the University of Alberta. Food services provided training in regular commercial and short order cooking, as well as in a month's outdoor camp cooking.

Evening classes accommodated 899 students in 32 different courses. Some of these, such as bookkeeping, proved so popular that they had to be offered several times. Some of the evening classes were offered in six communities outside of Whitehorse.

The Anik B Satellite programs which originate on the campus of the British Columbia Institute of Technology in Vancouver, B.C., are transmitted through WHTV in Whitehorse.

The Yukon Vocational and Technical Training Centre has been included in the Knowledge Network linking community colleges in British Columbia. It can therefore offer these Anik programs to Whitehorse residents. One hundred and twenty-one students registered for 22 satellite transmitted programs while an unknown number of persons watched these programs in their homes. Alberta Access Programs were added to the satellite programs this year.

Adult basic education courses continued in five rural communities.

The Adult and Continuing Education Branch again cooperated with the Government of the Northwest Territories to provide accommodation in Yukon for students of the Renewable Resources Credit Course taught through Selkirk College and presented at the Adult Vocational Training Centre in Fort Smith, NWT. Members of this class, two of whom are from Yukon, spent one month of their field training in Yukon in the spring, 1980.

Plans for programs and buildings for Yukon College were given fresh impetus during the year. Construction and development are scheduled to occur in three phases over a ten-year period: Phase I — Trade and Industrial; Phase II — Academic, Business, and Applied Arts; Phase III — additional programs for the areas identified in Phase I and II.

The Yukon government has responsibility under the Adult Occupational Training Agreement — Canada Manpower Industrial Training Program (CMITP) — to help determine priorities for employer centred training. This provides Yukon employers with expertise and assistance in developing training plans. Cyprus Anvil Mining Corporation in Faro is becoming more involved in training. The Government of Canada, provides funds to employers who provide industry-based training. Cyprus Anvil is taking advantage of two programs — CMITP and Critical Trades Skill Training (CTST).

There will be a number of new trades designated under the Apprenticeship Training Ordinance. Review of the Regulations and Ordinance is continuing with the Trade Advisory Committees and other representatives in labour, associations, and businesses in Yukon. Apprentices continue to be sent to British Columbia and Alberta for training. At the present time there are more than 150 apprentices registered in Yukon. Carpentry Level III has just been offered at the Yukon Vocational and Technical Training Centre. There were 14 students in attendance. In the coming year, Levels III and IV in-school training for apprentices will be held at the Vocational Centre. These are five week module courses. An effort is being made to hold upgrading courses which will provide theoretical knowledge to the non-certified journeymen. These courses will be in heavy equipment mechanics, partsman, welding, oil burner mechanics and carpentry.

The Apprenticeship Program continues to grow as industry becomes more involved. Statistics for the period January 1, 1980, to December 31, 1980 show — nine tradespeople wrote a Yukon Tradesman Qualification Examination, five obtained a pass mark; eight tradespeople wrote an Interprovincial Standards Examination, seven obtained a pass mark; 34 people completed Apprenticeship Training Programs, 30 obtained tradesman qualification certificates, 27 received the Interprovincial Standards Red Seal. There were 155 apprentices registered on December 31, 1980.

As of December 31, 1980, 535 Tradesman Qualification Certificates had been issued by Yukon. Of these, 188 had the Interprovincial Standards Red Seal.

A Pre-Trades Training Course for women was offered for the first time in the spring, 1980. Twelve women participated.

The only dental therapy course in the northern territories is located at the Adult Vocational Training Centre in Fort Smith, NWT. There are Yukon students taking part in this training.

The Community Health Representative program was re-instituted in 1979 after a lapse of a few years. It continued in 1980 with the cooperation of the Department of Indian Affairs and Northern Development and Medical Health Services of Health and Welfare Canada.

Four Yukon students are being trained in the Northern Civilian Air Mechanics Course at military base Camp Borden, Ontario.

Plans for 1981-1982

A six-week course in Employment Orientation for women will be offered in January-February, 1981, for the first time. The course will provide information on the kinds of training available and the expectations of employers. The final week of the course will provide on-the-job experience.

A mobile unit, equipped to provide training in small engine repair, is to be delivered in April, 1981. It will serve rural communities in Yukon by taking this program to the people. The Adult and Continuing Education Branch holds this precept as a priority wherever it is practically possible.

An evaluation system for the branch was begun during 1980 to develop a means of assessing need for present and new programs and to improve programs already in operation. Questionnaires and data gathering instruments will be completed in 1981 and committed to the computer. The evaluation design is intended to include instruments which will yield information about programs from employers, graduates, dis-continuant, students, and staff. Cost benefit analysis will also be part of the design.

Each year the students at the Yukon Vocational and Technical Training Centre build a detached single family dwelling to provide practical experience for students in carpentry, electrical, and welding classes. The house built by the 1980-81 students incorporated energy efficient measures relating to insulation, footings, window shades, and heating arrangements.

A Yukon Pipeline Employment Training Plan has been developed by this branch, together with that of the Manpower Division of Yukon Department of Consumer and Corporate Affairs. Its purpose is to provide access to some pipeline related jobs for those individuals who often have difficulty entering the work force. Labour intensive areas considered for five to six week training periods under this plan are construction, camp and kitchen helpers, and clerical workers. Opportunities for training in some additional skills such as first aid, driver training, and heavy equipment operation, will also be provided.

The initial courses in a two-year Business Administration program to be offered on a part time basis as required by business and industry are to be given in September, 1981. These courses will be available through the Yukon Vocational and Technical Training Centre.

An evening course in training of tellers for banks (there are six banks in Whitehorse), will be given in the autumn, 1981.

The carpentry course is being revised. The house building project will be discontinued and instructional technique will change to a more traditional style of institutional instruction.

The plumbing course, offered several years ago, but discontinued, will be offered again in 1981.

Painting and decorating will be offered in 1981.

Recreation

Yukon hosts the World. In March, 1981, Whitehorse, Yukon, was the site of the final event of the International Ski Federation World Cup of Cross Country Skiing. The Whitehorse Ski Club was the first Canadian club to host this event, which featured male and female skiers from 11 countries including Norway, Finland, Soviet Union, and Australia.

A new ski chalet was erected by the ski club to complement the existing racing and touring trail system. Project Coach, Yukon's version of the National Coaching Certification Program, continued as a program of the branch. Increased numbers of Yukoners become certified coaches under the program. Both the Yukon Sports Federation and the Yukon Arts Council provided administrative support to the territory's sports governing bodies and cultural organizations. The hosting of the first Yukon Contact marked an important year in the performing arts. The Contact is to become an annual event, bringing together Yukon's performing artists with community sponsors. Workshop sessions designed as solutions to Yukon problems were offered for both sponsors and performers.

The branch was expanded slightly by the addition of another community recreation consultant. The consultants and the office staff were involved in staging the third Recreation Board Members Seminar. At the request of community recreation boards, local and regional workshops were conducted and coordinated by branch staff. Financial assistance programs in support of community recreation boards, cultural organizations, and territorial sports governing bodies were continued by the branch. Likewise, the branch continued to support the portable swimming pool program by providing swimming pool managers for each pool.

The Yukon Lottery Commission completed its first full year of operation. The commission supervises the sale of interprovincial lottery tickets and distributes the revenues earned. Lottery tickets are marketed by an agent under contract to the commission. The commission dispenses the lottery revenues upon application. All lottery revenues are used for the development of recreation. The members of the Lottery Commission are appointed, one by each Member of the Legislative Assembly.

Department of Consumer and Corporate Affairs

The Department of Consumer and Corporate Affairs operates through four branches: Corporate Affairs, Consumer Services, Manpower and Labour, and Motor Vehicles.

Corporate Affairs

Responsibilities

This branch facilitates commercial and other credit transactions. It facilitates business development and protects the public through incorporation and registration mechanisms for business enterprises; provides a means by which non-business organizations (societies) may pursue their objectives through a corporate entity; and regulates the trading of securities.

Review 1980-81

In 1980-81, the branch processed 171 incorporations pursuant to the Companies Ordinance, 181 extra-territorial registrations, 2388 annual reports, and 4982 other documents. There were 199 partnerships and trade-names registered under the Partnership Ordinance, 28 societies and 3 cooperative associations were incorporated; and 319 annual returns and other documents were registered. There were 21 registrations effected for securities issuers, brokers and salespersons.

In 1981-82, the branch intends to implement a simplified personal property registration system eliminating registration of actual contract documents and providing faster and more positive search capacity.

Consumer Services

Responsibilities

This branch protects consumers and the professionals through licensing standards and handles redress procedures to persons aggrieved by the conduct of a licensed person. It administers criminal code provisions respecting games of chance; provides a service to the business community and consumers (including landlords and tenants) in resolution of disputes; provides a consumer information service to assist consumers with evaluation of goods and services in the marketplace. The branch also creates an awareness of consumer oriented services available from government and other sources.

Review 1980-81

In 1980-81, the branch received 225 complaints and enquiries relating to the Consumer Protection Ordinance and 175 under the Landlord and Tenant Ordinance. During the same period, business and professional licences were issued as follows: Business, 597; medical, 56; chiropractors, 3; optometry, 2; dental, 12; dental hygienists/therapists, 12; notaries, 88; legal, 171; pharmaceutical chemists, 9; clergymen, 15; scientists and explorers, 32; real estate, 43; insurance, 167; collection agents, 6.

Manpower and Labour

The Manpower and Labour Branch was formed during the year by amalgamating the Manpower Planning Unit, originally based in the Department of Education, with resources existing within the Department of Consumer and Corporate Affairs involved in administration of the Occupational Health and Safety, Labour Standards, and Fair Practices Ordinances/Regulations.

Responsibilities

This branch provides policy development, research, and planning support to all agencies involved in the manpower and labour field in the territory. It coordinates development of manpower and labour related policies and programs; improves the status of women in the territory; develops programs relating to project assessment, employment development, and manpower delivery; promotes awareness of and compliance with the Labour Standards Ordinance; changes discriminatory attitudes and promotes awareness of and compliance with the Fair Practices (Human Rights) Ordinance; changes attitudes toward occupational health and safety, and promotes awareness of and compliance with Occupational Health and Safety, Mining Safety, and related legislation so as to improve health and safety standards in the workplace.

Review 1980-81

There were 205 new complaint files opened under the Labour Standards Ordinance during 1980-81 and a total of \$58 416 in outstanding wages was collected. Two complaints were received pursuant to the Fair Practices Ordinance. There were 105 workplace safety inspections performed.

In 1981-82 the branch intends to pursue revision of the Labour Standards and Fair Practices (Human Rights) Ordinances and prepare an Occupational Health and Safety Ordinance.

Motor Vehicles

Responsibilities

This branch maintains a vehicle registration and identification system and a driver licensing testing program. It maintains records of individual driver performance and generally administers the Motor Vehicles Ordinance. It provides support services to the Transport Public Utilities, Driver Control and Medical Review Boards.

Review 1980-81

There were 22 884 motor vehicle registrations processed during 1980-81 and 2 686 operator's licences were issued during the year for a total of 16 178 active licences at year end. There were 1 077 accidents reported with 11 fatalities and 317 injuries. The Transport Public Utilities Board received 140 applications for Operating Authority, 117 of which were accepted.

Department of Health and Human Resources

Responsibilities

The department delivers and administers such programs as income maintenance, services for seniors, child care and protection of children, adoption, services to unmarried parents, family services, juvenile probation and rehabilitation.

Health Services provides programs, administration and financial support for health care services throughout Yukon. The branch administers the Yukon Health Care Insurance Plan, Hospital Insurance Plan, the Travel For Medical Treatment Ordinance, Cancer Diagnosis Ordinance, and Alcohol and Drug programs. Speech pathology, audiology programs, and vital statistics are also responsibilities of the branch.

Health Services

Review 1980-81

Hospital and medical care is provided through two insurance plans. Spiralling costs in these areas are reflected in the period under review although demand for service has remained relatively stable.

The Medical Services Branch of Health and Welfare Canada, in consultation with the Government of Yukon, operates public health services including environmental health, mental health, infectious and chronic disease control, and a school dental program. These programs are carried out through four health stations, 11 health centres, and five hospitals throughout the territory.

Vital Statistics from January 1, 1980, to December 31, 1980, show 483 births, 203 marriages, 135 deaths, and four stillbirths. Sixteen delayed birth registrations, 50 adoptions, 28 name changes, 14 legitimations, 25 requests for changes to registrations, and 83 divorces were processed.

Alcohol and Drug Services underwent and completed a major review. During the year, there were 696 persons in counselling and 1344 admissions to the Detoxification Centre. During the past year, there was increased emphasis on public education and community programming.

Human Resources

Review 1980-81

During the year, the branch's services were re-organized under a regional manager, Whitehorse; regional manager, field; and director of child welfare. A director of research and training and departmental administrator provide support services to both branches of the department.

Social assistance costs increased 29 per cent over the previous year with an increase in caseload of 33 per cent. Research started on the establishment of a pilot project to provide a program of assistance to single parents who may be in a position to return to the work force. During this period, there was increased demand for counselling services and support for community organizations.

Child welfare services experienced a thorough review of youth services and an expansion of educational and preventive services to high risk youth. While expenditures in child welfare remained stable, the number of children in care declined by 18.5 per cent. Day care services were augmented as funds were made available to enable centres to meet standards set out in the Day Care Ordinance.

A therapeutic group home was established and plans were undertaken for a citizens' committee for the International Year of the Disabled. Services to senior citizens include operation of two lodges and the Pioneer Utility Grant Ordinance which provides a \$300 annual grant to seniors who live in unsubsidized accommodation. During the year, grants were made to the Yukon Family Services Association, Child Development Centre, and Yukon Lifeline. In a continuing move to decentralize services, two additional field offices were opened bringing the number of regional offices to six.

Plans for 1981-82

Plans include a Pharmacare plan for senior citizens, a sliding scale fee subsidy for users of day care centres, and a capital grant for the Rehabilitation Society to purchase improved premises. It is also proposed that funds be allotted to the citizens' committee for the International Year of the Disabled. The Youth Services Centre will be relocated in two smaller settings to more adequately meet the diverse needs of the juvenile population.

Tourism and Economic Development

Responsibilities

The Department of Tourism and Economic Development coordinates the formulation, development and implementation of short, medium and long term economic development strategies, plans and programs for Yukon. It provides a centralized research capability and establishes comprehensive social, economic data base to service the needs of all Yukon government departments and the public at large. The department manages and administers an extensive tourism marketing and development program.



The steamboat Tutshi, seen at its resting in Carcross, carried cargo, passengers and mail between Carcross and Atlin, B.C. It is one of three remaining steamboats in Yukon. The wagon in the foreground was used as a mail coach during the era. Photo: Yukon Government.

Special Programs Branch

Responsibilities

In 1980 the Department of Tourism and Economic Development was reorganized to form a new branch responsible for implementing the department's economic development and energy conservation program. It plans and negotiates new programs of various federal agencies.

Review 1980-81

During 1980-81 the Special ARDA Program approved 21 projects for funding at a total project cost of \$1.2 million. These projects created 44 jobs, mostly for peoples of native ancestry. The Conservation and Renewable Energy Demonstration Program was implemented. During the year, nine projects were approved for a total program cost of \$82 240. Technologies demonstrated included wind energy, micro hydro, solar energy, energy efficient housing designs and housing retrofits. The Energy Conservation Incentive Program, which provides free energy audits and financial assistance to commercial, industrial and institutional establishments, was implemented late in the fiscal year. Initial response to this program has been overwhelming.

The branch commenced negotiations with the federal government for funding of a new Business Development Assistance Program which should be operational by late 1981-82. The branch is also involved in the development of a Yukon Energy Policy which is slated for release by the summer, 1981.

Plans for 1981-82

The three existing programs will continue to operate. A higher level of activity is anticipated due to the availability of full time implementation staff. Re-negotiations of the Special ARDA agreement which expires in March, 1982, will take place during the coming year. Negotiations with the federal government will continue concerning the Business Development Assistance Program, which are expected to be ready for implementation late in the fiscal year.

Tourism Marketing Branch

Responsibilities

The Tourism Marketing Branch promotes Yukon as an internationally recognized tourism area.

Review 1980-81

1980 was a mixed year for the tourism industry in Yukon. Border crossings, a major indicator of visitor volume, were six per cent lower in 1980 than in 1979 with 340 000 people entering Yukon during the 1980 calendar year. This six per cent decline made itself particularly felt during the peak season (May to September) when 19 000 fewer border crossings were recorded than in 1979. Despite this decline, it is estimated over all visitor expenditures increased from \$36 million in 1979 to \$38 million in 1980.

Highway traffic, which accounted for two thirds of all Yukon visitors, dropped seven per cent from 1979 to 1980. Reduced automobile traffic was a primary area of decline as motorcoach traffic continued at just slightly less than 1979 volumes. Air traffic rose significantly with 1980 volumes up 14 per cent over 1979. Passenger rail traffic across the White Pass continued its plunge, dropping 49 per cent from 1979. However, White Pass and Yukon Route reports that new marketing efforts are boosting ridership and passenger revenue primarily through day excursions in Alaska catering to Skagway cruise passengers.

Attendance at visitor attraction and information centres throughout Yukon was mixed. Dawson reported significant growth registrations as did Haines Junction, while Watson Lake visitation just matched 1979 levels. In general, visitor counts at attraction and information centres in Whitehorse and Beaver Creek were down considerably from 1979.

Since 1975 the share of total visitor traffic originating from the United States has been declining steadily while Canadian and overseas visitors are growing. In 1980, 64 per cent of Yukon visitors originated from the United States, 27 per cent from Canada, nine per cent from other countries.

The Canadian Government Office of Tourism continued to assist by providing market places for retail agents, cooperative financial underwritings for visiting media, tour wholesalers and travel agents. A total of 55 retail travel agents and tour operators participated in familiarization tours of Yukon. Writers, photographers, film crews and broadcasters visited Yukon to compile material to publicize the territory to Canada, the United States, Belgium, Holland, Germany and England. The branch embarked on a program of cooperative marketing with the State of Alaska.

Plans for 1981-82

Cooperative marketing projects will be continued in conjunction with the Yukon Visitors Association. The cooperative marketing with the State of Alaska will be continued.

Economic Research and Planning Branch

Responsibilities

The Economic Research and Planning Branch undertakes research analysis, planning and policy formation on all matters related to economic development. Service to government includes analysis and advice on matters pertaining to Yukon's future, particularly in mining, energy, transportation and business development. In addition, the branch provides a statistical information service to government, the private sector and the public. The branch publishes a comprehensive economic review and provides information to the private sector and the public at a rate of approximately 100 written or oral requests per month.

Review 1980-81

The Economic Research and Planning Branch expanded its statistical services to the public by producing a new and expanded publication entitled "The Yukon Economic Review". This publication brings together all the existing surveys conducted plus a wide range of additional information. Dissemination services were also expanded and the branch persuaded Statistics Canada to undertake the Canada Labour Force Survey and Consumer Price Index for 1981. The Economic Research and Planning Branch has been involved with the mining industry in the formulation of a Yukon mineral policy. A mineral economist is now on strength and in June, 1980, the department hosted a mineral symposium bringing together the senior executives of all major mining companies involved in exploration and development in Yukon. MacMillan Pass is expected to be the next major area for mineral development in Yukon. In anticipation of a significant impact from these projects, the Government of Yukon initiated a Task Force which has brought together senior executive and government representatives in joint cooperation toward the orderly development of the area. The Task Force met three times and will continue to meet regularly.

In conjunction with the MacMillan Pass, the Economic Research and Planning Branch has been involved in the development of a new mine in Yukon to supply barite to the Beaufort Sea. The financial problems of the White Pass and Yukon Railway were solved with the completion of an agreement to provide financial assistance to the railway. The completion of these three-year-long negotiations was assisted through the involvement of the Department of Tourism and Economic Development.

Officials of the department have initiated negotiations with the federal government under the General Development Agreement to provide for new development programs which will be broader and more comprehensive than the existing cost-sharing agreements.

Plans for 1981-82

The branch intends to further expand its data collection and dissemination in 1981-82. A new Yukon statistical review will be produced during the year and a computerized business directory is expected to be in operation. The branch will attempt to increase the availability of data to new business. A Yukon mineral policy will be presented for public reaction during the year and increased emphasis will be placed on the development of medium and smaller sized mining projects. Nonetheless, the larger projects will be a major project and emphasis will be on the MacMillan Pass Task Force. Research efforts will be increased, including the expanded use of computer modelling and simulation.

Tourism Development and Planning Branch

Responsibilities

The Tourism Planning and Development Branch develops a competitive international tourism product which will generate economic and social benefits for Yukon.



The Kaskawulsh Glacier, which can be seen on a 15-mile hike from the Alaska Highway, is just one of the many exciting facets of Yukon's Kluane National Park. Rock debris collected by the movement of the glacier causes the striped effect. Photo: Yukon Government.

Review 1980-81

Between 1979 and 1980 more than \$10 million was reported in construction activity related to the tourism industry in Yukon. While Yukon's tourism industry enjoyed a mixed year in terms of visitor volumes and travel trends, there were major developments on other fronts of the industry. The Yukon tourist industry received a major boost in April, 1980, with the commencement of the Canada-Yukon Tourism Agreement (CYTA). This is a two-year \$6 million federal-territorial agreement for tourism development. Yukon's contribution is \$900 000 with the balance coming from the federal Department of Regional Economic Expansion and the Department of Indian Affairs and Northern Development. Up to \$5.25 million was allocated for tourism development and \$750 000 was allocated for research and planning. The agreement recognizes that Yukon's history and wilderness areas provide for a stronger tourism industry. This program could help counter-balance the traditional "boom and bust" pattern of Yukon's resource-based economy, while protecting and, where necessary, enhancing those aspects that make Yukon unique.

The most visible undertaking under the CYTA in 1980 was the design and construction of the Whitehorse Cross-Country Ski Chalet in preparation for the 1981 World Cup and North American Cross Country Ski Championships in Whitehorse. Completed at a cost of about \$1.5 million, the chalet and world class cross-country ski track system will give recognition to Yukon.

The Klutane region attracted international attention last summer with the designation of the Klutane National Park and St. Elias-Wrangell Mountain Ranges as a World Heritage Site. To coincide with this, Parks Canada opened its new park headquarters in Haines Junction. Tourism Yukon's new Visitor Information Centre opened as a part of this complex. This regional attraction will stimulate additional tourist interest in and enjoyment of Yukon's unique and varied wilderness areas.

A research study undertaken during 1980 was Tourism Yukon's "Coupon Conversion Study." It was designed to determine how many coupon inquiries were "converted" into actual visits to Yukon in 1980. Questionnaires were sent out to about one quarter of the 32 000 parties who had requested Yukon travel information. The study found, that the overall conversion rate was more than 15 per cent. This means that the coupons contributed to bringing about 4 700 parties of visitors to Yukon in 1980. The study further found that the average expenditure per party was \$1 032 in Yukon and that Americans constituted about 73 per cent of visitors polled and Canadians formed the remaining 27 per cent. The findings of this study are now providing guidance to Tourism Yukon for its 1981-82 marketing.

In the private sector, Watson Lake's new Gateway Motor Inn opened in March, 1980, replacing the old Sportsmen Motel which was partially destroyed by fire a few years ago. The new Gateway Motor Inn's capacity is 52 units. This addition to the supply of accommodation in Watson Lake was offset in early 1981 by the partial destruction of the Belvedere Motor Hotel by fire with a loss of over 50 units. The Klondike Visitors Association, based in Dawson City, continued development of its Diamond Tooth Gertie's Gambling Hall operation and purchased the Oddfellows Hall for future restoration. In addition, financial assistance grants were made to various organizations in Dawson in support of the community's development.

Plans for 1981-82

A series of projects started under the two-year Canada-Yukon Tourism Agreement will be continued during the year and new projects currently planned will be commenced. Research and planning will be carried out for longer-term development programs and there will be more emphasis on economic development and marketing within the tourism industry.

Department of Municipal and Community Affairs

Municipal Services Branch

Responsibilities

The branch helps develop local government in Yukon communities. It provides a full range of municipal services, including guidance to municipal governments, community planning and land development. The branch promotes quality of life through urban social facilities and utilities.

Review 1980-81

The new Municipal Ordinance was passed by the Legislative Assembly in the fall session. The Ordinance, which reflects concerns and support from the Association of Yukon Communities, will go into effect January 1, 1982. Preparations continue for a Municipal Financial Aid Ordinance and incorporation of new municipalities. Major projects under the Community Assistance Ordinance included continuation of sewer upgrading for Mayo, water supply improvements at Haines Junction and continued funding for the Dawson City recreation complex. The Dawson City water and sewer system was completed. The \$5 million Land Development Program included continuation of the Hillcrest subdivision, Teslin residential subdivision and final planning for residential and industrial lots in Beaver Creek.

Plans for 1981-82

The Capital Assistance Program will be reviewed. Watson Lake's application to the Yukon Water Board for new sewage treatment facilities, turned down earlier, will be resubmitted with revisions. In Haines Junction, the final phase of a new sewage treatment facility is slated for construction. The Land Development program has been reduced to \$500 000, but will cover two major developments in Mayo and industrial land expansion in Watson Lake.

Lands Branch

Responsibilities

The Lands Branch administers and manages lands under the Government of Yukon. The principal function is the orderly sale and leasing of community lands.

Review 1980-81

During 1980-81 close to 100 sales agreements were signed with individuals and builders. There were over 100 leases for such diverse uses as recreation and agriculture.

Plans for 1981-82

The Lands Branch will initiate a forest management program. However, the principal activity will continue to be the streamlining of land administration systems and procedures. The Land Branch expects that sales of residential land will increase in 1981-82. The federally-operated recreational cottage program will be transferred to the branch. New rural residential programs and possible agricultural programs will be started during the year.

Assessment Services Branch

Responsibilities

The branch provides property assessment services to all Yukon Taxing Authorities by preparing assessment rolls for municipalities and the Yukon government. The branch defends assessments at Assessment Review and Appeal Board hearings. The branch assists the territorial tax collector and provides a real property appraisal service to other government departments. Assessment values now represent current property values. Assessment comparisons between 1980 and 1981 are:

<i>Location</i>	<i>1979-80 Assessment Tax Year</i>	<i>1980-81 Assessment Tax Year</i>
Whitehorse	\$477 674 870	\$498 050 000
Dawson City	18 610 120	19 442 000
Faro	30 826 500	36 940 000
Other Areas	140 334 930	177 356 000

Protective Services Branch

Responsibilities

Protective Services inspects all building construction, equips and trains all volunteer fire departments and provides an ambulance service throughout Yukon. Protective Services enforces the Building Standards Ordinance, Area Development Regulations (Zoning), Electrical Protection Ordinance, Fire Protection Ordinance, Boilers and Pressure Vessels Ordinance, Elevator and Fixed Conveyances Ordinance and the Gasoline Handling Ordinance. Protective Services inspectors also perform these duties for Yukon communities. Fire departments in all communities except Whitehorse are staffed by volunteers. The Fire Marshal's office, as part of Protective Services, sees that these fire departments are adequately equipped and properly trained to suppress fires within their communities. Regular training sessions are held in each community. The ambulance service is also a voluntary organization, with the exception of Whitehorse, as Protective Services Branch provides equipment. In addition the branch has a supervisor who travels through Yukon teaching first aid to all ambulance volunteers and any one else who may wish to take advantage of this training.

Statistics and Activities

There were 556 building permits issued in Yukon during 1980 for a construction value of \$33 006 139. The upward trend is expected to continue through 1981. A total of 82 fires during 1980 caused \$1 319 205 in property losses. This represents a decrease of 28 fires from 1979 but an increase in fire losses of \$497 761. Additional training is planned for ambulance service personnel during 1981. More emphasis will be placed on passive fire protection such as training, inspections and public education.



Old Crow, with a population of approximately 250, is Yukon's most northerly community. This small Indian village is situated on the banks of the Porcupine River and is about 75 miles north of the Arctic Circle.

Department of Justice

Responsibilities

This department administers justice throughout Yukon and provides legal advice and services to the commissioner, members of the Legislative Assembly, government departments and agencies. Programs administered by this department include the Courtworkers Program, Legal Aid, the RCMP contract and Special Native Constable. Responsibility for the Compensation to Victims of Criminal Injury Program was transferred to the Worker's Compensation Board during 1980-81. In addition, drafting of ordinances and regulations fall within the department's responsibilities as do prosecutions under Territorial Ordinances and court appearances on behalf of the government and its officers.

The Whitehorse Correctional Centre provides institutional services for the incarcerated. Probation Services supervises offenders and prepares court reports.

The Yukon court system comprises the Supreme Court, Court of Appeal and Territorial Court. Justice of the Peace courts are held in most outlying areas and the Territorial Court travels as required. The court system provides small claims officials and lay juvenile judges. A Crown Prosecutor's office for prosecution of Criminal Code and federal offences is maintained in Whitehorse by the federal Department of Justice.

The Probation Services Branch has offices in Whitehorse, Watson Lake and Mayo. Service is provided to all other areas by workers from these offices, travelling as required. The community work-service program, started in Whitehorse in 1979, has been extended to Watson Lake and Mayo, with plans to extend it to rural areas as soon as feasible.

The Whitehorse Correctional Centre is a medium security institution. It provides custody for male and female prisoners serving up to two years less a day, detention and care of persons remanded for trial, sentencing, immigration and deportation hearings or awaiting appeal hearings. It also provides for prisoners awaiting transfer to federal or mental institutions. A number of programs designed to facilitate the return of prisoners to society are carried out at Whitehorse Correctional Centre.

The program instituted in 1979 to upgrade the quality of work of lay justices is continuing. A Justice Information System study is presently under way. The Land Titles Office administers the Canada Land Titles Act in Yukon. Registers are maintained for certificates of title and other documents such as mortgage and survey plans.

The chief coroner administers the Coroner's Ordinance and ensures that coroners are available throughout Yukon. The public administrator handles estates of deceased persons, and administers estates of persons declared mentally incompetent. In the course of this work, the public administrator handles all legal matters and acts in legal matters for the benefit of minors.

Review 1980-81

Land Titles

Document registrations	3 004
Certificates of titles	1 043
Condominium certificates of title	4
Plans of survey	64

Public Administrator

Files opened for deceased	73
Files opened for missing persons	3
Files opened for minor children	4
Files opened for mental health	1
Current open files	233

Chief Coroner

<i>Manner of Death</i>	<i>Territory Total</i>
Natural causes	90
Accidental	13
Motor vehicle accident	16
Suicide	11
Homicide	1
Missing persons	5
	136

Supreme Court

Actions, civil	466
bankruptcy	10
compensation — victims of crime	4
bar admissions	26
change of name	5
adoptions	24
trials, criminal	6
civil	1
Appeals, criminal	19
civil	5
court of appeal	12

Responsibility for adjudication of compensation for victims of crime was transferred to the Worker's Compensation Board.

Territorial Court

Actions	92
Small debt claims	380
Maintenance actions	67
Wardships	39
Juvenile court cases	235
<i>Offences</i>	
Number of charges	1 578
Convictions	953
Acquittals	88
Stays or withdrawals	362
Committed for trial	3

Legal Aid

Applications accepted — civil	144
— criminal	220

Probation Services

New adult probation admissions	849
Number of court reports	435
Impaired drivers' program attendance	318
Community work service — hours	11 500
— persons	180

Whitehorse Correctional Centre

Number of inmate days	21 584
Average number of inmates	59.1
Work releases granted to inmates	14
Hours of community work by inmates	19 670
Hours of institutional work by inmates	52 404

Plans for 1981-82

A Justice Information System Study was started in September and will be completed in 1981-82. This is part of a National Project for the development of the Justice Information satellite being sponsored by the federal Department of Justice, Statistics Canada and the Justice Departments of the provinces and territories.

A study into the need for increased capacity at Whitehorse Correctional Centre is under way. This study will take into account the various needs for facilities over the next two decades and will produce a renovation plan.

Department of Library and Information Resources

Responsibilities

The department's two functions include the Yukon Archives and Records Services, which covers archival and records management for all territorial government departments, and library services to the Yukon public and schools.

Review 1980-81

The Yukon Archives was used by more than 4 500 researchers and orders for 1 600 photographs and negatives were processed by the photographic technician. There were 79 new primary collections accessioned and the imprint collection increased.

A conservation workshop, display of rare northern maps and an open house during International Archives Week were sponsored. Visual displays and films were presented in many Yukon communities. Records Services converted three records stations to modular shelving. Increased records activity was evident in that 4 941 new files were raised and 46 671 were routed to departments for action.

Library Services Branch has a stock of approximately 150 000 items and distributed 30 739 items to 51 outlets. The branch filled 2 139 interloan requests including 540 from outside the Yukon. The processing of 9 704 catalogued volumes, 4 557 uncatalogued paperbacks, and 37 uncatalogued audio-visual kits was completed. Whitehorse Public Library circulated 84 264 volumes to show an increase of seven per cent over the past year. The total circulation in all branches was 122 847. Audio-visual services circulated 8 409 films. Progress was made on the Learning Centre for the schools.

Plans for 1981-82

Over the long term the Yukon Archives and Records Services will plan future expansion of archives and records management. Description of collections, to provide increased accessibility and conservation of fragile items, will remain priorities.

Further conversion to modular shelving for records stations will take place as funding permits. The Micrographics Unit will film Workers' Compensation documents during the year, in addition to projects for Renewable Resources, Legislative Assembly Office and Health Services. Plans call for an automated library system, restoration of the Carnegie Library in Dawson and a permanent art collection for the Yukon.

Department of Highways and Public Works

Responsibilities

The department maintains and improves highways and highway structures, provides and maintains office accommodations and general building maintenance and building construction for all Yukon government properties. The department also provides mechanical services for all Yukon government equipment and provides engineering services to government departments. The department was undergoing restructuring during 1980-81 to have the department reorganized into four branches: Highways and Transportation, Public Works, Municipal Engineering and Administration.

In 1980-81 the department operated under seven sections: Central Administration, Highway Maintenance, Building Maintenance, Mechanical, Projects, Municipal Engineering, and Property Management.

Review 1980-81

The Highway Maintenance Section maintained the 4 399.7 km of the Yukon Highway System. Calcium chloride dust control treatment was applied to 1 340 km and 241 km of road received bituminous surface treatment. The Hunker-Granville road received major repairs, necessitated by heavy mining traffic in the Dawson City gold fields. The ferry over the Yukon River in Dawson City carried 38 013 vehicles and 126 479 passengers which compares to 40 217 vehicles and 124 700 passengers for the previous year. The cable ferry over the Pelly River at the Ross River Settlement carried 4 443 vehicles which compares to 3 856 vehicles in 1979-80. Maintenance of 10 Arctic "B" and "C" Airports was carried out under an agreement with Transport Canada and 20 territorial emergency airstrips were maintained. The Dempster Highway was maintained on a year-round basis to the Northwest Territories boundary. Vehicle Weigh Stations were operated at Watson Lake, Whitehorse and Haines Junction.

The Building Maintenance Section carried out preventive maintenance programs and emergency repairs to government-owned buildings. The section has a complement of 28 tradesmen.

The Mechanical Section operated workshops in Whitehorse and in Dawson City and also provided camp mechanics to a number of highway maintenance camps. This section consists of 68 employees and maintains and repairs approximately 1 500 pieces of equipment.

The Projects Section continued the road reconstruction and paving program on the Klondike Highway from the Alaska Highway Junction to the Campbell Highway turn-off. A total of 10 km was reconstructed and 16 km reconstructed in the previous year were paved. The second year was completed of a two-year grade improvement program on the Dawson-Boundary Road. On the South Canol Road a program of replacing aging timber bridges with multiplate culverts commenced with the construction of 11 sites. The program of upgrading the old section of the Klondike Highway between Carcross and Skagway continued with the reconstruction of 12 km. This work is funded through the Department of Indian Affairs and Northern Development under the Federal-Territorial Engineering Services Agreement. Reconstruction also commenced on the final 6 km of this segment of the Klondike Highway. Additions to the Watson Lake Elementary School, the Watson Lake High School, and the Haines Junction School were completed. Work commenced on a substantial addition to the Van Gorder School in Faro. Planning commenced for a new school at Pelly Crossing, a new junior high school for Whitehorse, an administration building for Mayo, an addition to the Old Crow School and an addition to the Carmacks School. A two-year school insulation program was completed. A program was started to upgrade ventilation and heating systems in territorial garages and workshops. A contract was awarded to construct a new staff quarters building at the Klondike Camp on the Dempster Highway.

The Municipal Engineering Section planned, designed and implemented numerous municipal type engineering projects, reported as part of the submission of the department of Municipal and Community Affairs.



Hydraulic mining on Bonanza Creek, Yukon

The Property Management Section with a complement of 22 employees, operated the Whitehorse Territorial Administration building. Janitorial contracts were let for all other Yukon Government administration buildings. Office space leases from the private sector were negotiated as were leases of government office space to such others as Local Improvement Districts (LID's). The department operated with an assignment of 357.5 person years. The budget was \$22.2 million. Capital projects were approximately \$10.4 million. This work was planned and implemented with in-house staff or with the assistance of consultants and architects.

Plans for 1981-82

All operating and maintenance programs will continue in Highway Maintenance, Building Maintenance, Mechanical Operations and in Property Management. The reconstruction of the Klondike Highway will continue from the Alaska Highway intersection to the Campbell Highway turn-off. This will include the reconstruction of 32 km of road. Road work on the last 6 km of the Carcross-Skagway section, which commenced in 1980-81, will be completed. A pedestrian walk will be constructed on the Carcross Bridge. The bridge replacement program will continue on the South Canol Road. The Mount Freegold road will receive minor upgrading. The major addition to the Van Gorder School in Faro will be completed. Construction will commence on school additions at Carmacks and Old Crow and on a new school for Pelly Crossing. Work will commence on a new junior high school in Whitehorse and on an administration building for Dawson City. The staff quarters building on the Dempster Highway at Klondike will be completed. A new staff quarters building will be constructed at the Tutchitua Highway Maintenance Camp. The upgrading program of heating and ventilation systems in highways maintenance buildings and workshops will also continue. Bituminous surface treatment will be applied to an additional 178 km on the Alaska Highway.

Renewable Resources

Administration

Responsibilities

The branch provides assistance in financial and personnel management.

Review 1980-81

The department underwent a physical relocation and reorganization which required the development of an Administrative Branch to achieve greater efficiency and control of finances, inventory and personnel. Reclassifications within the branch brought about the establishment of an administrator, inventory control clerk, and accounts payable/receivable and personnel clerks.

Plans for 1981-82

Strong emphasis will be placed on inventory control and financial matters. Formulation and implementation of internal financial and personnel procedures will be introduced to provide overall guidance to the branches. The establishment of a word processing computer will facilitate the department's data requirements.

Resource Planning Branch

Responsibilities

The Resource Planning Branch plans and guides the use of Yukon's natural resources in an environmentally and socially acceptable manner for the maximum benefit to Yukon residents. The branch is responsible for regional planning, resource economics and resource inventory programs.

Review 1980-81

The branch went through major personnel changes during 1980-81. Consequently, new perspectives were brought to bear on many of the branch's programs. Work continued on the East Kluane Land Use Plan. Several reports were prepared in this planning study including: A Regional Perspective; Existing Use; and Geologic and Hydrogeologic Interpretations of East Kluane Project Area. The Interim Management Plan for the Dempster Highway was administered by the branch and reports were prepared on the surficial geology, wildlife, vegetation and forestry of various sections of the highway corridor.

The branch led the planning role in cottage lot development to facilitate the transfer of recreational lands from the federal government. A shoreline inventory and preliminary plan was prepared for the east side of Teslin Lake.

The branch was involved in the development of procedures for safe management of hazardous waste in western and northern Canada. Additionally, the branch participated in the preparation of development assessment guidelines for Yukon. Beaufort Sea developments and North Slope planning were also involvements of the branch.

Agricultural policy was developed further during 1980-81. An agricultural cost of production study was carried out, with a report now complete. The branch chaired a steering committee of federal and territorial departments overseeing a study of the Yukon freshwater sports fishery. Additionally, the branch maintained its role with the Yukon Forest Research Advisory Committee and continued its liaison with forestry companies.

Preparatory work on the Yukon River Basin Study was undertaken by members of the branch and participation in the Mackenzie River Basin Study was undertaken.

The ecological land survey completed its first year of field work in the Southern Lakes Study area. Mapping of the data is proceeding and arrangements have been made for the preparation of interpretive maps. Vegetative mapping of the East Kluane planning area was undertaken with a report and maps available by May, 1981.

A contract was awarded for a data storage study. Work is progressing and a preliminary report will be submitted. An air photo contract was awarded for photography at a scale of 1:50 000 of the Carmacks/Ross River project area. Pedological assistance to the ecological land survey was contracted for a total of 90 days. As a result of this contract a soils report has now been completed.

Other work completed by the end of the fiscal year was a visual value assessment of the area around Whitehorse in the Southern Lakes project area and the Kusawa Lake biophysical study.

Plans for 1981-82

On going projects for the up-coming year include East Kluane regional planning, Dempster Highway Corridor planning, cottage lot development planning, MacMillan Pass regional planning, renewable resource economic and policy planning, agriculture policy implementation, development of boating restriction regulations, the ecological land survey and continued inter-governmental liaison on fisheries and forestry.

Parks and Historic Resources Branch

Responsibilities

The Parks and Historic Resources Branch develops, manages and administers outdoor recreational areas and historic sites in Yukon. At present, the branch is responsible for 62 sites in the four Yukon districts of Watson Lake, Whitehorse, Dawson and Haines Junction.

Review 1980-81

Five projects were initiated in 1980-81 under the General Development Subsidiary Agreement. The new workshop in Whitehorse was completed and Operations and Development moved into the building in February, 1981. There was extensive development at Kusawa Lake, Marsh Lake and Richardson Mountain on the Dempster Highway. Rehabilitation and expansion of existing campgrounds continued on a limited basis.

Under the Tourism Subsidiary Agreement, signed in early 1980, stabilization and protection continued, of historic structures along the Yukon River. Much of the work centred around the structures at Fort Selkirk. These projects, along with the initiation of new projects, will be continued in 1981-82.

During the year two policies were drafted. An 'Operations Policy' will aid and guide branch personnel in the organization and operation of the branch. The second, 'Park System Planning, A Policy Proposal', will provide direction to the process of establishing a park system and fulfill the legislative mandate that exists.

Plans for 1981-82

Three projects will continue from the last year. They include the placement of shelters and signs and expansion of the campgrounds in the Dempster Highway. Development of campgrounds at Million Dollar Falls and Watson Lake will begin this year. The initial stages will occur of the development of a campground in Carcross and a recreational park at Chadburn Lake, near Whitehorse.

In September, 1981, the Parks and Historic Resources Branch will host the Federal/Provincial Parks Conference in Whitehorse. It is at this conference that the branch and YTG wish to hold the opening ceremony for the Yukon's first Territorial Historic Park at Fort Selkirk.

Wildlife Branch

Responsibilities

The Wildlife Branch is charged with the protection and management of the wildlife resources of Yukon. The branch administers and enforces the Game Ordinance, Fur Export Ordinance, Brands Ordinance, Pounds Ordinance, Migratory Birds Convention Act, Canada Wildlife Act, International Agreement on Trade in Endangered Species of Flora and Fauna, Game Export Act, and the Freshwater Fisheries Regulations.

The branch's main office is located in Whitehorse with field officers stationed at Dawson City, Haines Junction, Mayo, Ross River, and Watson Lake. In the summer, a temporary crew works out of Old Crow. Various research and educational programs are also carried out.

The branch sits on the Federal/Territorial Land Use Advisory Committee and has provided assistance on such major projects as the Alaska Highway gas pipeline, the Shawkak Project, Alaska Highway paving projects, and Yukon River basin pre-planning studies.

Review 1980-81

The branch underwent major changes during 1980-81. A new director was appointed and assumed responsibilities in September, 1980. A new citizen's group the "Wildlife Advisory Committee" was established to advise the Minister on wildlife policy and management. The Field Services and Enforcement Section was reorganized into a Northern and Southern Region with regional headquarters at Dawson City and Whitehorse. The branch hired Yukon's first female officer, Melanie Courchene, posted to Mayo region.

Several of the branch staff were involved as technical advisers to Land Claims negotiations and assisted in the development of the "Northern Yukon Resource Management Model".

Throughout the year, Yukon's conservation officers were actively engaged in the enforcement of numerous territorial and federal statutes to protect Yukon's wildlife resource. This involved educational programs, administration, outfitting, issuance of licences and permits, patrols, and assistance to other staff and agencies.

Annual surveys were carried out to monitor the trends in several sheep and goat populations in Whitehorse area. Investigations were initiated on a sheep population whose rams have a high percentage of animals with deformed horns. There was a survey on the distribution and frequency of the mandibular disease "lumpy jaw" in all Yukon sheep and goat populations. Outfitter Area 1, north of Dawson was surveyed.

Monitoring and research of the porcupine caribou herd remains a high priority. This was the first year that reliable knowledge of sex composition was determined for the herd during the rut. The sex ratio of the herd is critical for the biannual census.

A study also was initiated on resident caribou herds in the Wernicke Mountains and Hart River basin with cooperative funding between YTG and Pan Ocean Oils, Ltd.

The Squanga Lake caribou investigations were completed. The Burwash investigations continued, with support from Foothills Pipeline (Yukon) Ltd.

The Dawson moose study continued with the monitoring of radio-collared animals. Various survey techniques were successfully tested in the Caribou Mountain and Teslin burn areas. Ptarmigan census was conducted in the south, central, and far northern areas of Yukon.

Birds of prey research and management continued with five projects including inventory studies, harvest experimentation, a peregrine falcon recovery project, management experimentation in the Dempster corridor, and a continuing joint study with the University of British Columbia in the winter ecology of gyrfalcons.

Waterfowl projects centered around the breeding of trumpeter swans and the use of the Nisutlin delta by geese and ducks.

Vegetation and lichen biomass sampling of the Dempster Highway pipeline corridor was completed by the Habitat Section this year. This will contribute to broader study on the impact of the Dempster Highway on the caribou.

The fur section is continuing its work with marten. Studies on the winter ecology for this species were intensified this year. The fur section conducted an intensive trapper education workshop this year in Watson Lake. Future workshops are being planned with more involvement by the Yukon Trappers' Association.

Although the season is not over yet, it appears that the fur harvest value will exceed \$1 million for the first time. This is largely attributed to the price of long haired species like lynx and marten and the corresponding increase in trapper effort.

The study was continued of the grizzly population in the Ogilvie Mountains, initiated in 1978. Other bear projects included the monitoring of garbage dumps, the sending of questionnaires to all bear hunters, the production of the brochure "The Bear Facts" and a large number of problem bear and bear harvest analyses.

Plans for 1981-1982

The branch will construct some facilities at Old Crow and hire a new conservation officer for Yukon's northern region. New storage warehouse facilities will be built at Mayo and Dawson. A new Wildlife Ordinance is being developed for introduction into the next Legislative Assembly. Intensive moose inventory activities are planned for November, 1981. The fur section will be assessing a study area for research on beaver. The branch is developing a policy for government on the outfitting industry.

Department of Government Services

Administration

Responsibilities

This department coordinates general service agencies for the various departments within the Yukon government. The three main branches are Systems and Computing Services, Supply Services and the Public Affairs Bureau.

Systems and Computing Services

Responsibilities

The branch provides a systems analysis and design service as well as electronic information processing to all government departments and corporations. These services are provided to increase the efficiency and effectiveness of other government programs. The branch also coordinates related activities which utilize outside resources.

Review 1980-81

The new IBM 4331 computer was installed and the conversion from the IBM System 3 is under way. A word processing feasibility study was completed which made some very encompassing recommendations. The computing service workload has increased by more than 50 per cent and the systems group faced a four to five year back-log in systems analysis, design and project coordination tasks.

Plans for 1981-82

During the next year, this branch's major objectives will be the completion of the computer conversion, clearing up much of the systems analysis back-log, completion of feasibility studies for, and establishment of, remote computing capabilities including word processing.

Supply Services

Responsibilities

The branch provides resources to all government departments to encourage greater efficiency and economy in areas such as purchasing, capital asset control, transportation, communication, printing services and warehousing.

Review 1980-81

Purchase orders were issued for \$20 million; service contracts for \$6 million; and local purchase orders for \$1.2 million. The annual auction produced a revenue of \$57 828. More than 70 per cent of all purchasing activity was contracted to Yukon businesses. The Central Transportation Agency assumed coordination of all transportation arrangements, including: air charter, scheduled air, U-drives, pool vehicles, general freight and chattel movements. The printing facilities were upgraded with additional machinery.

Plans for 1981-82

Plans for the upcoming year include the development of a commodity/catalogue/cross reference library; the review of asset related policies and procedures to establish more comprehensive controls; the computerization of asset functions; the production of a new transportation manual; and, development and initiation of a safety and defensive driving program for all government employees.

Public Affairs Bureau

Responsibilities

Public Affairs provides in-house public relations consulting and production services to all government departments, agencies and corporations.

Review 1980-81

In addition to numerous publications, slide shows, exhibits and government guides and directories, the branch issued almost 300 press releases and 15 feature articles, initiated publication of an employee newspaper and completed a mineral display for the government administration building. A cost-sharing agreement was completed with the Government of Canada for the Inquiry Centre which handles 88 137 inquiries including 51 801 by telephone and 4 469 by mail.

Plans for 1981-82

During the upcoming year, the branch plans to implement a Use Manual for the exclusive Yukon Government 'Wordmark'; complete an up-to-date photo and slide library and develop a photo centre.

Yukon Workers' Compensation Board

Responsibilities

The Workers' Compensation Board administers the Workers' Compensation Ordinance and adjudicates all matters arising under that ordinance. The financial responsibility of the board is to guarantee that compensation and pensions awarded to injured workers or their dependents be paid according to entitlement as long as required; collect from employers sufficient funds to meet these obligations; and keep the cost to employers at a minimum while achieving maximum stability of assessment rates.

Review 1980-81

A total of 1939 claims were reported during 1980, compared with 1778 in 1979. Increases in the amounts of compensation resulted from Section 79 of the Ordinance, which increases the amount of compensation in accordance with changes in the Consumer Price Index. The amount of the increase at January 1, 1980, was 9.1 per cent. During 1980 there were 1367 employers registered compared with 1347 in 1979.

Yukon Liquor Corporation

Responsibilities

The Yukon Liquor Corporation regulates imports, distributes and retails alcoholic beverages within Yukon. It ensures that the requirements of the Liquor ordinance, the attendant regulations and the goals and objectives of the corporation are upheld. It also issues, cancels, and suspends liquor licences, enforces the ordinance, inspections and all other matters relating to control of the sale of liquor.

The Board of Directors has all legislated responsibilities and is involved in the evolution of by-laws, budget policies, and corporate business matters. This appointed board is now functioning with full authority under the Liquor Ordinance.

As the collegial Crown Corporation is under the joint control of the government and the Board of Directors, the chief executive officer directs, supervises and controls on behalf of the government under the general direction of the board. This separates day-to-day control from government, precludes the Board of Directors from political pressure, while still allowing the government accountability to the public. The Minister responsible for the Corporation answers to the Legislature for the corporate mandate received from that body and to the government for matters involving major policies.

Review 1980-81

Administration

Detailed evaluation and analysis of corporate structure to reorganize and plan have been on-going. A management committee composed of the general manager and four branch managers was formed.

New and amended legislation and regulations were passed on gambling in licensed premises, special occasion permits, licence fees and conditions on licences, and the prohibition of troublesome patrons.

The corporation presented an interim report to the Standing Committee for Alcohol and Drug Related Problems in Yukon.

Operations

The six liquor stores in the territory are located at Whitehorse, Dawson, Mayo, Faro, Haines Junction and Watson Lake. All of these outlets are served from the Central Warehouse in Whitehorse.

Liquor sales throughout Yukon including surcharge

	1979-80	1980-81
Spirits	\$ 4 987 622	\$ 5 984 190
Beer	4 016 997	5 414 958
Wine	1 561 971	1 917 044
Total	\$10 366 630	\$13 316 192

There were 526 special occasion permits and 116 reception permits issued during the year.

A total of 7 364 tons of liquor was handled and 515 800 dozen empty beer bottles were returned. Liquor consumption amounted to 830 020 gallons.

Financial Management

Feasibility studies on computerization and point of sale continued.

Licensing and Inspection

<i>Liquor licences issued</i>	1979-80	1980-81
Liquor Cocktail Lounge	46	45
Beer Tavern	11	10
Dining Room	32	37
Restaurant Beer and Wine	34	35
Liquor Off Premises	61	66
Beer Off Premises	31	31
Club Liquor	8	9
Beer Canteen	4	4
Special Liquor	6	5
Aircraft Liquor	2	2
Room Service Liquor	19	19
Mess Liquor	2	2
Total	256	265
Special Occasion Permits	429	526
Reception Permits	125	116

There were eight applications for new licences. Three suspensions of liquor licences occurred during the year. A total of 676 visits were made on licensed establishments and 642 liquor permits were issued to the public.

Plans for 1981-82

Finalization of the data processing study will occur with implementation of the modes decided upon. The management committee will implement various recommendations from the structural and organizational review. Ongoing liaison with licensees, the Royal Canadian Mounted Police and other agencies and departments will further the control of the sale of liquor.

Negotiations with breweries, freight carriers, shipping agents and various other businesses will continue to ensure maximum service.

Yukon Housing Corporation

Responsibilities

The Yukon Housing Corporation develops, provides and operates various housing projects and programs throughout Yukon. The corporation's client group extends to many segments of the population, including low and modest income individuals, families, senior citizens and staff of the Yukon government.

Review 1980-81

Construction of a 36-unit senior citizens' apartment block in Whitehorse was completed in late July with occupancy taking place in early August. As well, senior citizens' fourplexes were constructed in Watson Lake, with occupancy in November, and Mayo, with occupancy in January.

Following a 1979-80 survey of existing insulation of all Yukon Housing Corporation's community and staff housing units, a start was made on a five year insulation retrofitting program for the corporation's housing stock. In this first year of the program, 45 community and 13 staff housing units had their insulation substantially upgraded.

On July 1 the corporation instituted fuel and power quotas for all community housing projects.

Plans for 1981-82

Plans are under way for the addition of three more staff housing units to the corporation's inventory. As well, the second year of the insulation retrofitting program has been planned. It is also anticipated that, due to an increase in economic activity, primarily in the mining industry, a number of the corporation's housing units will be sold to both government staff and the public. ■



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